

BLM LIBRARY



88045306

P&ECS

NMGSPS

Bio.Res.

Lnds&Rec.

Enrgy&Min.

1 Res 10-47

2 of 1600

L-1793  
BCU

# BUFFALO

## Resource Management Plan Draft Environmental Impact Statement



RECEIVED  
BLM MAIL ROOM  
MAY 16 9 14 AM '83  
STATE OFFICE  
SANTA FE, N. MEX

BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225

LD88045306

HD  
243  
.W8  
1384  
1983



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

District Office

951 Rancho Road

Casper, Wyoming 82601

PROPERTY OF:

BLM LIBRARY

NEW MEXICO STATE OFFICE

P. O. BOX 1449

SANTA FE, NEW MEXICO

IN REPLY  
REFER TO:

Dear Reader:

Enclosed is the Draft Resource Management Plan/Environmental Impact Statement (RMP/EIS) for the Buffalo Resource Area. Please review the document and direct any comments you may have to the Area Manager, Bureau of Land Management, P.O. Box 670, Buffalo, Wyoming 82834. Written comments will be accepted until August 15, 1983.

A public hearing will be held on June 21, 1983 to accept oral comment. The hearing will begin at 7:00 p.m. in the Meadowlark School, 550 South Burrett, Buffalo, Wyoming.

Written comments, and comments received at the hearing, will be addressed in the final RMP/EIS. You should retain this draft document since portions of the document will not be reprinted in the final.

District Manager

BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225





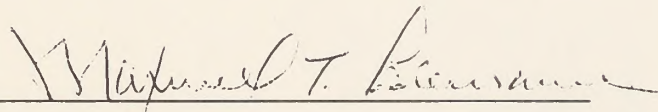
PROPERTY OF:  
BLM LIBRARY  
NEW MEXICO STATE OFFICE  
P. O. BOX 1449  
SANTA FE, NEW MEXICO

**DEPARTMENT OF THE INTERIOR**  
**DRAFT RESOURCE MANAGEMENT PLAN**  
**ENVIRONMENTAL IMPACT STATEMENT**

**FOR THE**  
  
**BUFFALO RESOURCE AREA**  
  
**RESOURCE MANAGEMENT PLAN**

PREPARED BY

**BUREAU OF LAND MANAGEMENT**  
**CASPER, WYOMING DISTRICT OFFICE**  
**BUFFALO RESOURCE AREA**  
**APRIL 1983**



**STATE DIRECTOR**  
**WYOMING STATE OFFICE**

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

DRAFT RESOURCE MANAGEMENT PLAN

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

BUFFALO RESOURCE AREA

RESOURCE MANAGEMENT PLAN

PREPARED BY

BUREAU OF LAND MANAGEMENT  
CUSTER WYOMING DISTRICT OFFICE  
BUFFALO RESOURCE AREA  
APRIL 1982

STATE OF WYOMING

WYOMING STATE OFFICE



**BUFFALO RESOURCE AREA**

**DRAFT RESOURCE MANAGEMENT PLAN**

**ENVIRONMENTAL IMPACT STATEMENT**

LEAD AGENCY: U.S. Department of the Interior

TYPE OF ACTION: Administrative

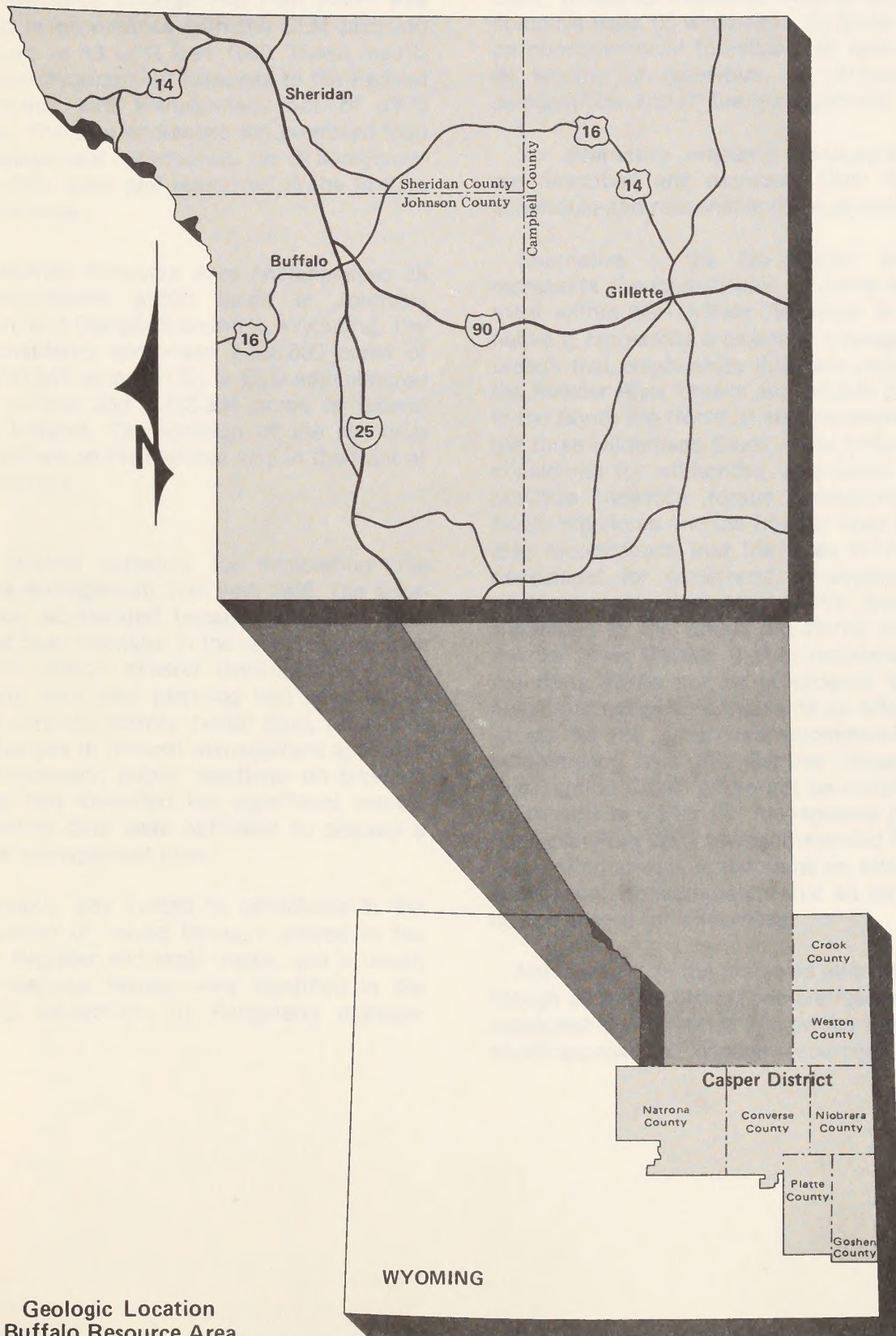
JURISDICTION OF ACTION: Campbell, Johnson, Sheridan Counties, Wyoming

ABSTRACT: This document presents and addresses the environmental consequences of six alternative land use plans for the Buffalo Resource Area, Casper District, Wyoming. The main planning issues relates to grazing management, wildlife and wilderness. The six alternatives and consequences address a variety of combinations of decisions relating to these issues. Besides the No Action Alternative which is a continuation of present management, the alternatives range from emphasizing livestock forage production to emphasizing management of watershed and wildlife habitat. Also, the alternatives make recommendations of no wilderness, all wilderness and partial wilderness for three wilderness study areas.





# SUMMARY





General Location  
Eastern Mountain Area



# SUMMARY

This Resource Management Plan (RMP) was prepared in accordance with the BLM planning regulations in 43 CFR Part 1600. These regulations were developed in response to the Federal Land Policy and Management Act of 1976 (FLPMA). The plan addresses the proposed land use management alternatives on BLM-administered public lands and resources in the Buffalo Resource Area.

The Buffalo Resource Area encompasses all BLM-administered public lands in Johnson, Sheridan, and Campbell counties, Wyoming. The area considered comprises 7,338,800 acres of which 798,848 acres (11%) is BLM-administered public surface and 4,733,384 acres is federal mineral estates. The location of the resource area is shown on the regional map in the front of this document.

The original schedule for completing this resource management plan was 1986. The schedule was accelerated because resource planning had been intensive in the resource area as a result of energy mineral development; major decisions from past planning had been implemented through activity plans; thus, no significant changes in present management appeared to be necessary; public meetings on previous planning had identified the significant issues; and existing data were sufficient to prepare a resource management plan.

The public was invited to participate in the identification of issues through notices in the *Federal Register* and local media, and in small group meetings. Issues were identified in the following categories: (1) Rangeland manage-

ment, including livestock, wildlife and nonconsumptive uses, (2) wilderness, (3) forest products on noncommercial forestland, (4) land disposal, (5) fencing of reservoirs, (6) off-road vehicle designations, and (7) fire management.

Six alternative resource management plans are described and analyzed. Each represents achievable and reasonable management levels.

Alternative 1, the No Action Alternative, represents the continuation of present management within the Buffalo Resource Area. Alternative 2, represents a balanced management approach that emphasizes livestock preference in the Powder River Breaks and wildlife preference in the South Big Horns. It also recommends that the three wilderness Study Areas (WSAs) not be considered for wilderness. Alternative 3, would optimize livestock forage production in the South Big Horns and the Powder River Breaks. It also recommends that the three WSAs not be considered for wilderness. Alternative 4, emphasizes protection for wildlife habitat and watershed in the South Big Horns and in the Powder River Breaks. It also recommends that the three WSAs not be considered for wilderness. Alternative 5, is the same as Alternative 2, except for the wilderness recommendations. It recommends that the Gardner Mountain and Fortification Creek WSAs not be considered for wilderness and that the manageable portion of the North Fork WSA be recommended for wilderness. Alternative 6, is the same as Alternative 2, except that it recommends that all three WSAs be considered for wilderness.

Alternative 2, is the preferred alternative. Even though all of the alternatives are reasonable and manageable, Alternative 2, provides the best balanced approach to manage resources.





# CONTENTS

## CHAPTER 1: PURPOSE OF AND NEED FOR THE ACTION ..... 1

### PURPOSE ..... 1

### THE PLANNING PROCESS ..... 1

#### Identification of Issues (Scoping) ..... 1

#### Development of Planning Criteria ..... 1

#### Inventory and Collection of Data ..... 2

#### Analysis of the Management Situation ..... 2

#### Formulation of Alternatives ..... 2

#### Assessment of Alternatives ..... 2

#### Selection of the Preferred Alternative ..... 2

#### Selection of the Resource Management Plan ..... 2

#### Monitoring and Evaluation ..... 2

### PLANNING CRITERIA FOR IDENTIFIED ISSUES ..... 2

#### Rangeland Management ..... 3

#### Wilderness ..... 3

#### Forest Products ..... 3

#### Land Disposal ..... 3

#### Fencing of Reservoirs ..... 3

#### Off-Road Vehicle Use ..... 3

## CHAPTER 2: DESCRIPTION OF THE ALTERNATIVES ..... 7

### BACKGROUND ..... 7

### SOURCE DOCUMENTS ..... 7

### ALTERNATIVE 1 ..... 8

#### Energy and Minerals Management ..... 8

##### Oil and Gas (M1) ..... 8

##### Coal Leasing (M2) ..... 8

##### Mineral Materials (M3) ..... 8

##### Locatable Minerals (M4) ..... 9

#### Lands and Realty Management ..... 9

##### Utility Corridors (L1) ..... 9

##### Access (L2) ..... 9

##### Land Disposals (L3) ..... 9

##### Pumpkin Buttes Communication Site (L4) ..... 10

#### Forest Management ..... 10

##### Allowable Cut (F1) ..... 10

##### Timber Sales (F2) ..... 10

##### Reforestation (F3) ..... 10

##### Noncommercial Forestland (F4) ..... 10



<b>Grazing Management</b>	10
Weed Control (G1)	10
Grasshopper Control (G2)	11
Grazing Administration (G3)	11
<b>Natural History and Cultural Management</b>	11
Management of Cultural Sites (NHC1)	11
<b>Management of Recreation and Visual Resources</b>	11
Middle Fork Management Unit (R1)	11
Dry Creek Unit (R2)	11
Off-Road Vehicle Designation (R3)	11
Public Fishing Sites (R4)	11
Billy Creek Campsites (R5)	11
Visual Resources (R6)	12
Surface Disturbance in Specified Areas (R7)	12
<b>Soil, Air, and Water Management</b>	12
Slope Restriction (SAW1)	12
Erosion Hazard (SAW2)	12
Rehabilitation (SAW3)	12
Weed Control on Disturbed Sites (SAW4)	13
Air Quality (SAW5)	13
Water Quality and Drainage (SAW6)	13
<b>Wildlife Habitat Management</b>	13
Fencing of Reservoirs (WL1)	13
Eagle Winter Roosts (WL2)	13
Raptor Nests (WL3)	13
Sharp-tailed Grouse Dancing Grounds (WL4)	14
Crucial Deer-Antelope Range (WL5)	14
Crucial Elk Winter Range and Calving Areas (WL6)	14
Animal Damage Control (WL7)	14
<b>Fire Management (FM1)</b>	14
<b>Wilderness</b>	14
<b>ALTERNATIVE 2</b>	14
Lands and Realty Management	15
Forest Management	15
Grazing Management	15
Recreation and Visual Resource Management	17
Wildlife Habitat Management	17
Fencing of Reservoirs	17
Allocation of Vegetation	17
Improvement of Riparian Habitat	17
Fire Management	18
Wilderness	18
<b>ALTERNATIVE 3</b>	18
Grazing Management	18
<b>ALTERNATIVE 4</b>	18
Soil, Air, and Water Management	18
Wildlife Habitat Management	18
<b>ALTERNATIVE 5</b>	18
Wilderness	19
	19



<b>ALTERNATIVE 6</b> .....	19
<b>Wilderness</b> .....	19
Summary of Environmental Consequences .....	19

## **CHAPTER 3: THE AFFECTED ENVIRONMENT** .....

<b>RESOURCE AREA PROFILE</b> .....	27
<b>Physical and Biological Features</b> .....	27
Air Quality .....	27
Topography .....	27
Water .....	27
Soils .....	28
Vegetation .....	28
Wildlife .....	29
<b>Cultural Resources</b> .....	32
<b>Economics</b> .....	32
<b>Social Attitudes and Lifestyles</b> .....	32
<b>Land Ownership</b> .....	32
<b>Land Use</b> .....	36
Mineral Development and Production .....	36
Livestock Grazing .....	37
Timber Harvesting .....	38
Recreation .....	40
<b>WILDERNESS STUDY AREA</b> .....	41
<b>Physical and Biological Features</b> .....	41
Geology .....	41
Air Quality .....	41
Topography .....	41
Water .....	42
Soils .....	42
Vegetation .....	42
Wildlife .....	42
<b>Cultural Resources</b> .....	43
<b>Social Attitudes and Lifestyles</b> .....	43
<b>Land Ownership</b> .....	44
<b>Land Use</b> .....	44
Mineral Development and Production .....	44
Livestock Grazing .....	45
Timber Harvesting .....	45
Recreation .....	45
<b>Wilderness Values</b> .....	48

## **CHAPTER 4: ENVIRONMENTAL CONSEQUENCES** .....

<b>ALTERNATIVE 1</b> .....	61
<b>Water</b> .....	61
<b>Soils</b> .....	61

Vegetation .....	61
Wildlife .....	62
Economics .....	62
Social Attitudes and Lifestyles .....	62
Land Ownership .....	63
Land Use .....	63
Mineral Development and Production .....	63
Livestock Grazing .....	63
Timber Harvesting .....	63
Recreation .....	63
Fire Management .....	64
Wilderness .....	64
<b>ALTERNATIVE 2 .....</b>	<b>64</b>
Water .....	64
Soils .....	64
Vegetation .....	64
Wildlife .....	65
Economics .....	66
Social Attitudes and Lifestyles .....	66
Land Ownership .....	66
Land Use .....	66
Mineral Development and Production .....	66
Livestock Grazing .....	66
Timber Harvesting .....	67
Recreation .....	67
Fire Management .....	67
Wilderness .....	68
<b>ALTERNATIVE 3 .....</b>	<b>68</b>
Water .....	68
Soils .....	68
Wildlife .....	68
Economics .....	68
Social Attitudes and Lifestyles .....	68
<b>ALTERNATIVE 4 .....</b>	<b>69</b>
Vegetation .....	69
Wildlife .....	69
Economics .....	69
Livestock Grazing .....	69
<b>ALTERNATIVE 5 .....</b>	<b>70</b>
Water .....	70
Vegetation .....	70
Wildlife .....	70
Cultural .....	70
Economics .....	70
Social Attitudes and Lifestyles .....	71
Land Ownership .....	71



<b>Land Use</b> .....	71
Mineral Development and Production .....	71
Livestock Grazing .....	71
Timber Harvesting .....	71
Recreation .....	71
<b>Wilderness</b> .....	71
<b>ALTERNATIVE 6</b> .....	71
<b>Water</b> .....	71
<b>Soils</b> .....	71
<b>Vegetation</b> .....	72
<b>Wildlife</b> .....	72
<b>Economics</b> .....	72
<b>Social Attitudes and Lifestyles</b> .....	72
<b>Land Ownership</b> .....	72
<b>Land Use</b> .....	72
Mineral Development and Production .....	72
Livestock Grazing .....	73
Timber Harvesting .....	73
Recreation .....	73
<b>Wilderness</b> .....	73
<b>PREPARERS</b> .....	75
<b>REFERENCES</b> .....	77
<b>COORDINATION, CONSISTENCY, AND PUBLIC PARTICIPATION</b> .....	79
Coordination Prior to RMP/EIS Preparation .....	79
Consultation and Coordination During Preparation of the RMP/EIS .....	79
Consistency With Other Plans .....	79
Ongoing Public Participation .....	80
Distribution List for Draft EIS .....	80
<b>APPENDIX A: Use of Mineral Materials</b> .....	83
<b>APPENDIX B: Timber Sales</b> .....	87
<b>APPENDIX C: Off-Road Vehicle Travel</b> .....	93
<b>APPENDIX D: Fire Management</b> .....	95
<b>APPENDIX E: Wilderness Designation</b> .....	97
<b>APPENDIX F: Range Allotment Categorization</b>	
Criteria .....	101
I Category Allotments .....	101





# CHAPTER 1

## PURPOSE OF AND NEED FOR THE ACTION

The purpose and need for this resource management plan (RMP) and environmental impact statement (EIS) are as follows:

To present resource management alternatives that address issues identified by the BLM and the public (see table 1).

To aid decision makers in selecting a land use plan for management of BLM-administered public land and resources in the Buffalo Resource area for the next ten years.

### THE PLANNING PROCESS

The planning process described in the planning regulations (43 CFR 1600) consists of the following nine action steps:

(1) identification of issues, (2) development of planning criteria, (3) Inventory and collection of data, (4) analysis of the management situation, (5) formulation of alternatives, (6) assessment of alternatives, (7) selection of the preferred alternative, (8) selection of the resource management plan, and (9) monitoring and evaluation.

A brief summary of action taken during each step of the planning sequence follows:

#### Identification of Issues (Scoping)

All existing planning documents were reviewed. Decisions that did not conflict with new policy, laws and regulations were carried in the "Continuation of Present Management" ("No Action") as defined in 43 CFR 1601.5-5.

BLM personnel prepared a description of the affected environment (chapter 3) and assessed the consequences that continuation of present management would have on the physical, biological and socioeconomic environment. Issues were identified in the following categories: (1) Rangeland management, including livestock, wildlife and nonconsumptive uses, (2) wilderness, (3) forest products on noncommer-

cial forestland, (4) land disposal, (5) fencing of reservoirs, (6) off road vehicle designation, and (7) fire management.

The public was invited to participate in the identification of issues through notices in the Federal Register and local media, and in small group meetings. In addition, all grazing lessees were contacted by letter or in person, as were interested individuals and organizations and local, state, and federal agencies. Public concerns were categorized as (1) similar to and grouped with issues identified by the BLM, (2) outside the jurisdiction of the BLM, and (3) new issues to be addressed in the RMP. The major concerns identified during the public scoping process dealt with rangeland management and wilderness. All issues identified are listed in table 1, at the end of this section.

#### Development of Planning Criteria

Planning criteria establish constraints and management guidelines that addressed each issue. Planning criteria established for specific issues are shown in the "Planning Criteria" section at the end of this chapter. The following guidelines were established at the outset of this plan:

Resolution of each issue would conform to existing law, policy and regulation. As a minimum, the range and wilderness issues would be addressed in the RMP.

Existing valid land use decisions or activity plans and their respective environmental assessments would be carried in the RMP under a "Continuation of Present Management" ("No Action") alternative. Activity plans having environmental assessments would not be reevaluated in the RMP unless an issue was identified and a change was required.

Data input for the RMP would consist of available information. This would include the physical data compiled in previous land use



## PURPOSE AND NEED FOR ACTION

plans for the Buffalo Resource Area and other available public information.

All alternatives formulated in the RMP would be reasonable and achievable, and would address the issues.

### Inventory and Collection of Data

Existing data from the BLM and other available sources were used to prepare this plan.

### Analysis of the Management Situation

This step assessed the capability of the BLM and the public resources to respond to the issues. Two issue areas (shown on map 10) were identified. These two areas received most of the focus during development of the RMP because they contain most of the resource area's crucial wildlife habitat, three wilderness study areas (WSAs), grazing allotments with opportunities for improvement and most of the well blocked BLM administered public surface.

### Formulation of Alternatives

Several options to resolve the issues were discussed.

Only those options that were reasonable and achievable were formulated into alternatives. The alternatives presented in chapter 2 of this RMP are complete plan alternatives that address all resource programs.

### Assessment of Alternatives

The physical, biological and socioeconomic consequences of implementing each alternative were assessed. These consequences are described in chapter 4. A summary of consequences appears in table 3, chapter 2.

### Selection of the Preferred Alternative

Alternative 2 is the agency's preferred alternative in the draft. It is preferred because (a) it best addresses the issues; (b) it is acceptable in terms of consequences; (c) it has the most favorable balance of resource uses; and (d) it is most

responsive to comments from the public and other agencies. A preferred alternative will also be indicated in the final.

### Selection of the Resource Management Plan

Public comments on this draft RMP/EIS will be evaluated, and a final RMP/EIS will be published. A RMP will be selected in a record of decision that will be published after the final EIS.

A rangeland program summary (RPS) will be issued either with the record of decision (ROD) or not later than five months after the ROD. The RPS will outline the proposed schedule for issuing individual allotment decisions.

At the conclusion of the 90-day review and comment period for this draft RMP/EIS, a wilderness study report (WSR) and separate final EIS will be prepared for all WSAs in the Buffalo Resource Area. The report will present to the Secretary of the Interior the BLM's recommendation on whether or not each WSA should be designated wilderness. The Secretary of the Interior then makes his recommendations on wilderness designation to the President, who in turn makes the final recommendation to the Congress. The final designation or nondesignation of each area as wilderness will be by an act of Congress.

### Monitoring and Evaluation

The plan will be monitored and evaluated for effectiveness during the 10 year life of the plan. Any monitoring and evaluation reports will be available for public review. Should changes in the plan be necessary, these will be accomplished through plan maintenance, an amendment, or a new RMP/EIS.

## PLANNING CRITERIA FOR IDENTIFIED ISSUES

Planning criteria have been established for each issue and is presented below.



## PURPOSE AND NEED FOR ACTION

### Rangeland Management

All grazing allotments have been categorized according to the present rangeland policy. The allotments have been categorized as: "I" (improve), "M" (maintenance), or "C" (custodial). The "I" category allotments will receive priority for the expenditure of range improvement funds and management. Categorization criteria and a list of "I" allotments is presented in Appendix F.

"I" allotments have been categorized on the basis of (a) range condition, (b) present management situation, (numbers of livestock, class, projects, season and use), (c) resource production potential, (d) resource conflicts, and (e) opportunity for a positive return on public investment.

"I" allotments form the nucleus for delineating specific area boundaries or "issue areas".

Crucial wildlife ranges and habitats will be considered in rangeland decisions, as will population goals and objectives for wildlife and livestock. Wildlife numbers and objectives would be coordinated with the Wyoming Game and Fish Department.

Rangeland decisions in the RMP will establish a framework for allocating forage among domestic livestock, wildlife, and nonconsumptive uses. Use adjustments on allotments, if necessary, will be made only after (a) data collected from resource inventory and monitoring studies indicate an adjustment is needed, and (b) an allotment management plan is prepared in cooperation with the lessee, and implemented.

### Wilderness

Qualification of WSAs for wilderness will be determined according to the criteria contained in the *Federal Register* 47, Volume no. 23: pp 5098-5122.

Each WSA will be considered on its own merit, and only the public lands inside the present WSAs will be considered.

Resource uses will be allowed in the WSAs as specified in the BLM's "Interim Management Policy and Guidelines for Lands Under Wilderness Review."

### Forest Products

The BLM will consider the use of non-commercial forestland to meet some of the demand for posts, poles, and firewood.

### Land Disposal

Identify lands for disposal according to Section 202 of the FLPMA.

### Fencing of Reservoirs

Fish and waterfowl habitat will be considered when designing new stockponds.

Evaluate the present requirement that 5 acres of land must be fenced for every 1 acre of surface water.

### Off-Road Vehicle Use

The RMP will propose designations where off-road vehicles (ORVs) can be operated on BLM-administered public land in Sheridan and Campbell counties.

The following criteria will be used to identify public lands in Campbell and Sheridan Counties for ORV designations:

Well blocked public lands with public access; high valued resource areas; well blocked public lands without public access; areas receiving intensive public use; and severe erosion areas.

The present ORV plan for Johnson County will remain effective.



# IDENTIFIED ISSUES

After the scoping process was completed and the issues were screened, the following 50 issues remained. Fourteen of them were combined into the seven issues identified in step 2 of the planning process, and those seven have been addressed in this RMP. These fourteen issues are marked with asterisks.

The following chart shows the rationale for dropping the issues that were not addressed.

TABLE 1  
BUFFALO RESOURCE AREA  
PLANNING ISSUE WORKSHEET

Suggested Issue No.	Subject	Addressed In RMP		Explanation
		Yes	No <sup>1/</sup>	
1.	In-stream flow legislation	X		No jurisdiction. Water under jurisdiction of the state of Wyoming.
2.	Stream channelization legislation	X		No jurisdiction. Water under jurisdiction of the state of Wyoming.
3.	Animal damage control	X		Addressed in existing MFP - RM-2.2 Predator Control Plan approved in 1981. District plan completed in 1983.
4.	Coal gasification	X		No jurisdiction.
* 5.	Forage allocation	X		Forage allocation has not been completed in the Buffalo Resource Area. Range issue.
6.	Coal slurry	X		No legal authority. Water for pipeline under jurisdiction of state of Wyoming.
7.	"Sagebrush Rebellion"	X		No legal authority. Congressional action needed.
* 8.	Wilderness designation	X		Legal and policy requirement.
* 9.	Off road vehicle (ORV) designation	X		ORV plan for Johnson County completed during 1980. Sheridan and Campbell not completed.
* 10.	ORV open areas (combined with 9)	X		
11.	Public hunting access	X		Addressed in existing planning.
12.	Middle Fork management	X		Addressed in existing planning.
13.	Middle Fork management facilities	X		Addressed in existing activity plan completed in 1981.
14.	Petrified tree management facilities	X		Addressed in existing activity plan completed in 1980.
15.	Environmental education areas	X		Addressed in existing planning.
16.	Public access	X		Addressed in existing planning.
17.	Coal development in Western Powder River	X		Addressed in existing planning--Western Powder River coal amendment.
18.	Coal gasification in Western Powder River	X		No jurisdiction.
19.	Uranium development	X		No authority to exclude lands from development except for withdrawal. BLM cannot stop or control development if present claims are valid.



# CHAPTER 2

## DESCRIPTION OF THE ALTERNATIVES

TABLE 1, Page 2

Suggested Issue No.	Subject	Addressed In		Explanation
		Yes	RMP No	
20.	Oil and gas development		X	Addressed in existing planning, Buffalo oil and gas environmental assessment.
21.	Access		X	Addressed in existing planning.
22.	Probable change in the oil and gas leasing procedure		X	No authority. Can be changed only by Department of the Interior action.
23.	Implementation of the 3809 regulations		X	This is standard operating procedure; therefore, it is not an issue.
24.	Going to a permit system with geophysical exploration		X	Proposed policy. This has not happened yet, but BLM will deal with it if it does.
25.	Energy demand will force oil and gas development into high-value areas (Middle Fork, face of Big Horn Mountains)		X	Addressed in present planning.
26.	Lack of sand and gravel inventory		X	Support item, not issue.
27.	Control of wildfire	X		Address in the RMP
* 28.	Controlled burns for forest and range	X		Support item. Identify specifics in allotment management plan. Range issue.
29.	Identification of areas of critical environmental concern (ACECs)		X	Covered in existing management framework plan (MFP). Red Wall has been designated ACEC.
* 30.	Use restrictions on watersheds	X		Will become part of range issue. Surface development activity is addressed in present planning.
31.	Reclamation of surface damages		X	Addressed in existing planning.
32.	Weed and pest control		X	Local weed control contracts are entered into with the County Weed and Pest Control Boards under authority of the Carlson-Foley Act.
* 33.	Expenditure of range improvement funds	X		Related to range issue.
* 34.	Livestock use on crucial wildlife habitat	X		Related to range issue.
* 35.	Coordination with SCS on intensive management	X		Related to range issue.
36.	Potential Recreation and Public Purpose (R&PP) lands		X	Resolved in existing planning.
37.	Land disposal through exchange and R&PP		X	Resolved in existing planning. Buffalo greenbelt, Gillette park, Fort McKenzie.
38.	Corridors		X	Resolved in existing planning. Corridor study completed with public input.
39.	Withdrawal review		X	Policy.
40.	Trespass		X	Policy.
41.	Open space		X	Resolved in existing planning.

TABLE 1, Page 3

Suggested Issue No.	Subject	Addressed In RMP		Explanation
		Yes	No <sup>1/</sup>	
42.	Underground water		X	No jurisdiction. Under jurisdiction of state of Wyoming.
43.	Withdrawing commercial forestland for recreation purposes		X	Resolved in existing planning.
44.	Withdrawing commercial forestland for wildlife cover		X	Addressed in existing planning.
45.	Timber harvesting		X	Addressed in existing planning.
* 46.	Land Disposal	X		Conflict with present planning decisions. Realty issue.
* 47.	Sale of timber products on noncommercial forestland	X		Could supply some demand, but present planning prohibits this. Forest issue.
* 48.	Fencing reservoirs of 5 acres or larger	X		Opportunity to develop waterfowl habitat on smaller reservoirs--considered in range issue.
49.	Energy mineral development in the Eastern Powder River may have drastic effect on wildlife within 5 - 15 years		X	The RMP decision level is the identification of coal lands that can be further considered for new leasing. Effects and mitigation will be considered at that time.
50	Fire Management	X		Address in the RMP

<sup>1/</sup> Those addressed in an existing plan have been incorporated into Alternative 1.



## CHAPTER 2

# DESCRIPTION OF THE ALTERNATIVES

### BACKGROUND

Alternatives that considered maximum resource production and protection were not carried. The maximum production alternative removed most environmental constraints, and the maximum protection alternative posed further constraints on resource use. These alternatives were not reasonable or achievable, and they were dropped in the early stages of formulation.

A "no grazing" alternative was considered, but it was not developed and analyzed because it was not identified during the scoping process, and it would not have addressed the grazing issues in the Buffalo Resource Area.

Six alternative resource management plans are described in this chapter. These alternatives are:

**Alternative 1:** The proposed action represents a continuation of the present management (No Action).

**Alternative 2:** Represents balanced resource use and no wilderness. This is the preferred alternative.

**Alternative 3:** Emphasizes livestock forage production and no wilderness. This represents the most reasonable maximum production alternative.

**Alternative 4:** Emphasizes wildlife and watershed values and no wilderness. This represents the most reasonable resource protection alternative.

**Alternative 5:** Balanced resource use (Alt. 2) and a partial wilderness designation in the North Fork.

**Alternative 6:** Balanced resource use (Alt. 2) and a wilderness designation for all three wilderness study areas.

Table 3, at the end of this chapter, briefly summarizes the cumulative environmental consequences of each alternative. Consequences are described in detail in chapter 4.

Listed below are the documents that form the No Action alternative. Documents are BLM publications unless otherwise noted and are available for review at the Buffalo Resource Area office.

Rangeland Grasshopper Cooperative Control Program Environmental Impact Statement, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1980

Animal Damage Control Plan, 1983, Casper District

Buffalo Management Framework Plan, 1979

Buffalo Oil and Gas Environmental Assessment (WY-061-0-29), 1980

Corridor Study and Recommendations for Major Energy-Related Transportation and Transmission Systems in Eastern Powder River Basin, Wyoming, 1977

Dry Creek Management Plan and Environmental Assessment (WY-061-7-9), 1980

Fortification Creek Oil and Gas Plan, 1982

Fire Management Plan for the Middle Fork Management Unit, 1980

Fire Management Plan for Wilderness Study Areas, 1980

Gillette Review Area Coal Amendment to the Eastern Powder River Basin Management Framework Plan, 1980

Highlight Coal Supplement to the Eastern Powder River Basin Management Framework Plan, 1979

Middle Fork Habitat Management Plan and Environmental Assessment (WY-061-1-35), 1980

Middle Fork Recreation Management Plan and Environmental Assessment (WY-061-1-35), 1980

Mineral Materials Disposal Plan and Environmental Assessment (WY-061-0-30), 1980

Johnson County Off-Road Vehicle Environmental Assessment and Implementation Plan (WY-061-1-34), 1981

Pumpkin Butte Communication Site Plan and Environmental Assessment (WY-061-9-57), 1980

Recluse Review Area Coal Amendment to the Eastern Powder River Basin Management Framework Plan, 1982

Ten-Year Timber Harvest Program for the Southern Portion of the Big Horn Mountains, 1982

Designated Noxious Weed Control Environmental Assessment, 1982

Western Powder River Basin Area Coal Amendment to the Western Powder River Basin Management Framework Plan, 1981



## DESCRIPTION OF THE ALTERNATIVES

### ALTERNATIVE 1 (Continuation of Present Management)

#### Energy and Minerals Management

##### Oil and Gas (M1)

Public land administered by the BLM will remain open for exploration, leasing, and development subject to the conditions contained in the Buffalo Oil and Gas EA, and the Fortification Creek Oil and Gas Plan.

##### Leasing

Oil and gas leasing would be deferred until coal mining was completed on federal coal leases for which mining and reclamation plans have been approved. A stipulation is attached to the lease which stipulates no surface occupancy  $\frac{1}{2}$  mile within the coal lease area. The area inside the coal lease further than  $\frac{1}{2}$  mile would not be leased.

Leasing for oil and gas would not be allowed on BLM-administered public land in the Middle Fork Canyon, and no surface occupancy would be permitted within  $\frac{1}{2}$  mile of the canyon rims (see map 1).

##### Drilling Operations.

No surface occupancy would be permitted on BLM-administered public land in the Amsden and Ed O. Taylor big game ranges (see map 1).

No surface occupancy for oil and gas development would be permitted on the tops of North Middle Pumpkin Butte and South Middle Pumpkin Butte on BLM-administered public land.

On BLM-administered surface where major new oil fields are anticipated, the BLM would consult with the oil company in preparing oil field plans to minimize impacts on land uses and the environment.

##### Coal Leasing (M2)

Federal coal lands are available for exchange or lease (map 2) and are subject to the following conditions:

Coal leasing would be postponed in producing oil and gas fields (map 1) where coal development would interfere with economic recovery of the oil and gas resource. Boundaries of known geologic structures (KGSs) are used to define producing oil and gas areas. Further consideration of coal leasing in the KGS areas is deferred except where it can be shown that economic recovery of oil and gas is or will be completed before coal mining operations begin (three years after leasing). The constraint can be lifted whenever BLM determines that all or part of a KGS is no longer required for oil and gas operations or that conflicts between oil and gas production and coal development can be mitigated.

Following expression of interest by industry and before coal lease tracts are delineated, the BLM would conduct a field review. Any oil and gas operations within the expression area will not be included in the coal lease tract. Once a tract is delineated new oil and gas operations will be considered in the tract profile as a resource conflict.

##### Mineral Materials (M3)

Extraction of mineral materials will be allowed at locations described in Appendix A and shown on map 1. Other areas will be considered on a site-specific basis upon request.

Disposal of mineral materials (sand and gravel, scoria, and moss rock) would be subject to the following conditions;

Reshaping of material sites on low terraces would have to be as close as possible to the original topography, with cut slopes no steeper than 3%. Highwalls on crushable aggregate mine sites would be no greater than 10%. The 3% cut slope and 10% highwall slope limitation could be waived at the discretion of the area manager.

During rehabilitation of high remnant terrace sites, all cut areas would be shaped to a 3:1 slope or less. The top edge of the cut slope would be blended into the natural slope. The 3:1 slope limitation could be waived by the area manager.



## DESCRIPTION OF THE ALTERNATIVES

No extraction of mineral material would be allowed within ¼ mile of an occupied dwelling unless the owner of the dwelling gives consent.

### Locatable Minerals (M4)

The BLM-administered public lands will be available for mineral location under the Mining Law of 1872 excepting the areas described below.

Sites that would be withdrawn from operation of the 1872 Mining Law are (a) Cantonment Reno, and (b) Dull Knife Battlefield (see map 4). These sites are on the National Register of Historic Places.

### Lands and Realty Management

#### Utility Corridors (L1)

New transmission and transportation facilities that cross BLM-administered public surface will be located within a compatible distance of existing facilities where possible. What constitutes a "compatible distance" would be determined case by case, with consideration given to the facility planned and to environmental considerations. This designation would apply to any of the following facilities:

Power lines— 69 KV or larger

Pipelines— 6 inches in diameter or larger.  
Oil field gathering lines are excluded.

State and Federal highways

Mainline railroads

New corridors would be designated on BLM-administered public surface when location within a compatible distance of existing facilities had been demonstrated to be impractical and unfeasible and where the environmental impacts could be mitigated.

A north-south corridor is established along the west side of the Powder River. The corridor, which starts about 10 miles east of Kaycee, extends north, joining the proposed Rural Electrification Administration (REA) transmission line near Arvada. It then runs along that transmission

line to the Montana state line.

The restrictions for this corridor are as follows:

A buffer zone of at least 2 miles would be maintained along the west side of the Powder River.

Where possible, the corridor would not be placed in areas of high and moderate potential coal, regardless of whether the coal ownership was private, state, or federal.

The actual location of facilities will be determined on the basis of the restrictions listed above and environmental and other factors.

#### Access (L2)

Access necessary to accomplish the timber harvest plan is included in Appendix B.

Public access into key recreation areas would not be acquired until specific management plans are developed and funding is available to implement management actions contained in those plans. The specific location of access routes and types of access would be defined in each management plan.

Priority consideration will be given to access in the following areas: (a) the Between-the-Creeks/Gardner Mountain areas from Mayoworth Slope Road on the north and Hazleton road on the west (approximately 1 mile); and (b) the North Fork of the Powder River area (approximately 1 mile).

Three cooperative hunting access programs would be developed involving private landowners, Wyoming Game and Fish Department, and the BLM in (a) Fortification Creek, (b) Powder River Breaks, and (c) South Big Horn Mountains.

#### Land Disposals (L3)

All land disposals would be conducted according to 43 CFR 2400 and 43 CFR 2700.

#### Exchanges

Priority consideration would be given to exchanges in which the BLM would acquire sur-



## DESCRIPTION OF THE ALTERNATIVES

face in the following areas:

Middle Fork of the Powder River

-----T42 & 43N; R82, 83 and 84W

Fortification Creek---T52N; R75, 76 and 77W

North Fork of Powder River

-----T44N; R85 and 86W

Pumpkin Creek-----T47N; R77W

Red Wall-----T41, 42, 43, 44N; R83W

Little Powder River-----T56 and 57N; R71W

Rochelle Hills-----T47, 48, and 49N; R70W

Gardner Mountain-----T44N; R84W

Weston Hills-----T53, 54N; R71W

Whitetail Butte-----T46 and 47N; R69W

Schoonover Road-----T49N; R77 and 78W

Bowman Hills-----T56N; R69W

### *Sale*

Isolated tracts of BLM-administered public surface in Campbell County could be considered for sale; however, no tract larger than 1,280 acres could be considered. Conveyance of mineral estates beneath private surface also could be considered. However, public surface over high or moderate coal would not be considered for sale.

### *Recreation and Public Purpose*

The Recreation and Public Purpose (R&PP) tracts described below and shown on map 3 would not be considered for coal leasing or disposal (other than for R&PP) until 1985 unless the counties or cities indicated reported to the BLM before 1985 that they had no interest in specified tracts. After 1985, the lands would be considered for coal leasing and disposal.

### *Sheridan*

T55N, R85W: Sec. 13, NE $\frac{1}{4}$  SW $\frac{1}{4}$

T56N, R82W: Sec. 27, SW $\frac{1}{4}$  NW $\frac{1}{4}$ , NW $\frac{1}{4}$   
SE $\frac{1}{4}$ ,  
Sec. 28, E $\frac{1}{2}$  NE $\frac{1}{4}$ , NE $\frac{1}{4}$  SE $\frac{1}{4}$   
Sec. 31, SE $\frac{1}{4}$  NE $\frac{1}{4}$ , E $\frac{1}{2}$  SE $\frac{1}{4}$

T56N, R83W: Sec. 12, W $\frac{1}{2}$  NE $\frac{1}{4}$ , W $\frac{1}{2}$  E $\frac{1}{4}$

### *Gillette*

T49N, R71W: Sec. 8, NE $\frac{1}{4}$  SE $\frac{1}{4}$ ,  
Sec. 9, NE $\frac{1}{4}$  SW $\frac{1}{4}$ , NE $\frac{1}{4}$  SE $\frac{1}{4}$

### **Pumpkin Buttes Communication Site (L4)**

All communications rights-of-way will be located on South Middle Pumpkin Butte until that butte is fully utilized as a communication site. Rights-of-way would not be permitted on North Middle Butte unless an applicant could show that only North Butte would provide the line-of-sight needed for a particular communication facility. Rights-of-way would be issued case by case. The BLM would improve the access road to meet all-weather standards.

### **Forest Management**

#### **Allowable Cut (F1)**

The annual allowable cut for the resource area is between 1 to 1.2 million board feet (MMBF).

#### **Timber Sales (F2)**

Approximately 7 to 10 million board feet (MMBF) of sawtimber has been identified for and will be offered for sale in the order shown in Appendix B (see map 3).

#### **Reforestation (F3)**

Forestlands on BLM-administered surface that were disturbed by surface development would be replanted with native species if natural regeneration could not be ensured.

Livestock grazing use would be suspended or adjusted on timber harvest areas until the seedlings being established were no longer in danger of damage from livestock grazing.

#### **Noncommercial Forestland (F4)**

Harvesting of juniper or ponderosa pine would not be allowed on noncommercial forestland except where necessary to control disease or insects.

### **Grazing Management**

#### **Weed Control (G1)**

The BLM would cooperate with local Weed and Pest Control Boards in the control of noxious weeds on BLM-administered public surface. Control measures would conform to pro-



## DESCRIPTION OF THE ALTERNATIVES

cedures outlined in the BLM's noxious weed control plan and EA of 1982.

### **Grasshopper Control (G2)**

The BLM would cooperate with local, state, and other federal agencies to control grasshopper infestations. Control measures would be in accordance with the procedures described in the EIS on the cooperative grasshopper management program (USDA - Aphis 1982).

### **Grazing Administration (G3)**

The current levels of livestock grazing (about 93,000 AUMs) would be maintained under term permits of 1 to 10 years. Trailing permits would continue to be issued upon need. Existing range improvements would be maintained but no new range improvements would be developed.

### **Natural History and Cultural Management**

#### **Management of Cultural Sites (NHC1)**

The BLM would develop an areawide plan for management of sites that appear to be eligible for and those sites on the National Register.

Known sites in the resource area that are on the National Register are Cantonment Reno and Dull Knife Battlefield. (see map 4).

### **Management of Recreation and Visual Resources**

#### **Middle Fork Management Unit (R1)**

In the Middle Fork management unit (map 4), use by visitors would be controlled to minimize impacts on cultural and visual resources, open space qualities, livestock grazing, watershed conditions, water quality, and wildlife habitat.

Existing use by livestock would be maintained in the unit. Crucial winter and summer range for deer, bighorn sheep, and elk would be protected and improved (see map 6). All stands of coniferous forests would be maintained for aesthetic values and wildlife habitat.

Stream banks along the Middle Fork, Buffalo Creek, Eagle Creek Canyon, Blue Creek, and

their tributaries would be protected to maximize fish habitat.

Access routes would be developed as described in Middle Fork Recreation Management Plan.

#### **Dry Creek Unit (R2)**

In the Dry Creek Petrified Forest area (see map 4), foot trails and interpretive signing would be established, parking and sanitary facilities would be constructed, and the site would be managed and protected as necessary from surface disturbance according to the Dry Creek plan.

#### **Off-Road Vehicle Designation (R3)**

Current off-road vehicle (ORV) designations for BLM-administered public land would remain effective in Johnson county. These are described in Appendix C (Also see map 4). Public land in Sheridan and Campbell counties would remain open.

#### **Public Fishing Sites (R4)**

The BLM will evaluate the potential for establishing and maintaining fisheries in the following reservoirs generally located as follows: (1) T55N, R72 W, Sec. 30; (2) T56N, R73W, Sec. 26; (3) T56 ½N, R69W, Sec. 33; (4) T56 ½N, R69W, Sec. 34; (5) T56N, R69W, Sec. 3; (6) T56N, R71W, Sec. 10; (7) T53N, R71W, Sec. 11; (8) T57N, R71W; Sec. 27 (9) T55N, R71W, Sec. 25; and (10) T46N, R71W, Sec. 9. (see map 4). Those reservoirs capable of supporting fisheries would be developed at the rate of one per year beginning in 1986.

The BLM would need the cooperation of the Wyoming Game and Fish Department in stocking and enforcement of site management plans.

#### **Billy Creek Campsites (R5)**

The BLM would begin, in fiscal year 1984, to develop a campground on the loop at the end of Billy Creek Road, T48N, R83W, Sec. 32 (see map 4). The campground would be completed by the end of 1986.



## DESCRIPTION OF THE ALTERNATIVES

### Visual Resources (R6)

All semipermanent and permanent facilities placed on BLM-administered public land might require painting or other methods of camouflage to blend with the natural surroundings. The area manager would specify paint or other methods of camouflage.

### Surface Disturbance in Specified Areas (R7)

On BLM-administered land in the Middle Fork Management Unit and the Red Wall, the following restrictions would apply:

Roads would be placed on ridges where possible, and side casting of material on ridgetop roads would not be allowed. If segments of roads had to be located on hillsides, the location would have to be screened by existing vegetation beneath the toe of the fill. Vegetation would screen the road cut from view at a horizontal sight distance of 200 feet.

Construction through juniper, mountain mahogany, or other timber stands would be avoided unless the vegetation could be used to screen the surface disturbance.

Proposed ridgetop structures would be moved back from the ridge enough to avoid skylining facilities or moved to other locations.

No new overhead power lines would be allowed. An overhead extension of an existing overhead line could be allowed by the area manager.

All equipment would be muffled so that sound pressure levels at 100 feet from the source would not exceed 65 decibels.

### Soil, Air, and Water Management

#### Slope Restriction (SAW1)

No surface development on slopes of 25% or more would be permitted on BLM-administered lands unless the area manager authorized such development in writing (See map 5).

#### Erosion Hazard (SAW2)

Development activity would not be permitted between March 1 and June 15 on BLM-administered lands where the erosion hazard is severe. This limitation would not apply to maintenance of existing facilities. Exceptions to this limitation could be authorized in writing by the area manager. (See map 5)

When soils possess high-erosion characteristics or where soil and precipitation conditions warrant, mulching would be done to promote vegetation. Mulching material would be 2 tons per acre of hay, straw, or excelsior wood fiber, or soil retention blankets or nettings made of paper, jute, cotton, or biodegradable plastic, or both. As an alternative to mulching, a cover crop of annual cereal (barley or oats) could be used where annual precipitation equals or exceeds 14 inches.

#### Rehabilitation (SAW3)

Rehabilitation of disturbed sites would be as nearly concurrent with the surface disturbance as possible. Topsoil would not be mixed with other soil or mineral material; rather, it would be stockpiled separately in a location from which it could be easily retrieved. Topsoil stockpiled for longer than 10 months would be reseeded, with rates and species composition specified by the area manager.

Soil and overburden would not be allowed in drainages. Material that was pushed over side slopes would be moved back onto the disturbed site and recontoured during rehabilitation.

All disturbed sites would be reseeded according to specifications to be developed by the BLM. Before reseeding, the site would be ripped if necessary, topsoil would be redistributed evenly, and the site would be disced on the contour if possible, and waterbarred. Reseeding would be completed after frost had left the ground and before May 15, or after September 1 and before ground frost. Seed mixtures, application rates, and planting depths for each reseeding would be specified by the area manager. Seeding would be repeated as necessary until the area manager determined that a satisfactory stand had been established.



## DESCRIPTION OF THE ALTERNATIVES

If the area manager so specified, disturbed sites would be fenced for two growing seasons after reseeding to prevent livestock grazing.

When specified by the area manager, snow fences would be erected on disturbed sites after the site had been reshaped, erosion-control structures were in place, and reseeding had been completed. They would be placed perpendicular to the prevailing wind so that snow would drift onto the rehabilitated sites, and they would be left in place until vegetation was reestablished.

### Weed Control on Disturbed Sites (SAW 4)

Weed control, if required by the area manager, would be done beginning the first year after vegetation became established. Timeframes would be established by the area manager. Control, which could be mechanical or chemical, would continue annually if necessary. If chemical control was used, all herbicides would have to be registered by EPA, approved for use by the BLM and the state of Wyoming. In addition, pesticides would have to be applied by a certified applicator in accordance with the DOI pesticide use policy.

### Air Quality (SAW 5)

If dust from surface disturbance or access roads creates problems for residents, dust abatement measures such as water or dust oil would be prescribed as necessary.

### Water Quality and Drainage (SAW 6)

Surface development would not be allowed in the areas where the disturbance might disrupt groundwater discharge, nor would it be allowed along perennial streams or their major drainages unless waived in writing by the area manager.

If surface development was authorized on low river terraces, stockpiled topsoil and mineral material would have to be located a sufficient distance from the drainage to prevent sedimentation.

When specified, sediment traps would be installed to prevent sediment generated from surface development from reaching stock ponds or reservoirs and streams.

If a site where surface development took place was subsequently used year-round, access roads would have to be upgraded and maintained to permit all-weather use. Roads would follow natural contours where possible. Where steep slopes would require extensive cuts and fills, roads should follow ridge lines.

Temporary roads would have to be flat-bladed unless cuts and fills of more than 3 feet were necessary. That area of the road, where cuts and fills exceed three feet, would be crowned and ditched.

No dumping or draining of fluids (except drilling fluid in approved pits on oil-gas well sites), dumping of trash, or burial of trash and wastes would be allowed onsite during surface development unless the area manager authorized it.

## Wildlife Habitat Management

### Fencing of Reservoirs (WL1)

Reservoirs covering 5 or more surface acres would be fenced to allow about 5 acres of upland habitat for each surface acre of water. Livestock water would be piped to a tank with a float valve well below the dam.

### Eagle Winter Roosts (WL2)

Surface-disturbing activity would not be permitted at any time within ½ mile of communal eagle winter roosts. From November 1 to March 30, no surface disturbance would be allowed within a biologic buffer zone around the roost. The size of the buffer zone would be established by the BLM after a field inspection. The buffers would be established on the basis of topography or vegetative screening.

### Raptor Nests (WL3)

Between March 1 and June 30, no surface disturbance would be permitted on public lands within a biologic buffer zone established for active nests of raptor species of high federal interest. The buffer area would be established by the BLM after a field inspection. The buffer would be established on the basis of topography or vegetation screening. An active nest is one that has been used at least once during the previous three years.



## DESCRIPTION OF THE ALTERNATIVES

### Sharp-tailed Grouse Dancing Grounds (WL4)

No surface disturbance would be allowed within 250 yards of identified sharp-tailed grouse dancing grounds at any time. No surface disturbance would be permitted within a ½-mile radius of sharp-tailed grouse dancing grounds from April 1 to June 1. This limitation would not apply to maintenance and operation of existing facilities (see map 6).

### Crucial Deer-Antelope Range (WL5)

Surface disturbing activity could be reduced or eliminated, at the discretion of the Area Manager, in crucial deer and antelope winter range from November 30 to April 30 and in fawning areas from May 1 to June 30 each year (see map 6).

### Crucial Elk Winter Range and Calving Areas (WL6)

No surface-disturbing activity would be permitted from November 30 to April 30 in crucial elk winter ranges (see map 6). No surface-disturbing activity would be permitted in elk calving areas from May 1 to June 30 (see map 6). Where oil and gas production is established, the oil and gas would be piped to tank batteries outside the crucial elk winter range (see map 6).

### Animal Damage Control (WL7)

Animal damage control (ADC) for predators will be allowed on BLM-administered public surface according to specifications contained in the Casper District ADC Plan.

### Fire Management (FM1)

All wildfires occurring on or threatening BLM-administered public land in the Middle Fork Management Area (map 4) and in Wilderness Study Areas would be aggressively attacked and suppressed. All actions would be carried out in a manner that would result in the least resource loss and environmental damage. (See Appendix D).

The use of prescribed fire would be permitted in the Middle Fork Unit (a) to control brush (b) to reduce hazardous fuel buildups, (c) to improve

wildlife habitat, (d) to improve watershed, and (e) to enhance tree regeneration by reducing competition, preparing seedbeds, and speeding up the decomposition processes. Prescribed fire would not be allowed in the WSAs.

### Wilderness

The areas presently under wilderness study would be managed according to the direction prescribed in the interim management plan. Major provisions include:

Interim management would remain in effect until the areas are released from WSA status by a final wilderness decision.

The WSAs will be managed for limited multiple use with care being taken to provide adequate protection of the critical watershed, scenic, and wildlife values in the areas.

Any mineral development in the areas would comply with the Buffalo Oil and Gas EA, the Fortification Creek Oil and Gas Plan and 43 CFR 3809 regulations.

North Fork and Gardner Mountain would be managed under BLM VRM Class II constraints (BLM Manual 8400). Fortification Creek would be managed under BLM VRM Class IV constraints.

Vehicular traffic will be restricted to designated roads and vehicle routes in accordance with the Johnson County ORV Plan.

## ALTERNATIVE 2 (Balanced Resource Use and No Wilderness)

There would be no change from Alternative 1 in the management of energy and minerals; natural history and cultural features; soil, air, and water. The management of other resources would be the same as that described for Alternative 1 except for the changes described below.



## DESCRIPTION OF THE ALTERNATIVES

### Lands and Realty Management

#### Disposal

Remove the restriction regarding disposal of public surface over high to moderate coal and place all public lands in one of **two** categories:

**Category I**— Lands and mineral resources which do **not** meet Sec. 203 criteria of the "Federal Land Policy and Management Act of 1976." Lands in Category I are to be *retained* in federal ownership and will **not** be considered for sale.

**Category II**— Lands and mineral resources which **do** meet Sec. 203 criteria of FLMPA. Lands in Category II will be considered for disposal. Lands can only be considered for sale if they meet the disposal criteria of Sec. 203. That criteria is defined as:

- 1) Land which is difficult and uneconomic to manage.
- 2) Land which was acquired for a specific purpose and is no longer necessary for that or any other federal purpose.
- 3) Land which would serve an important public purpose (i.e. community expansion, economic development, etc.) which cannot be prudently achieved on land other than public land.

If the land does not meet one of the above three criteria, it **cannot** be placed in Category II. Therefore, it would be placed in Category I and remain in federal ownership (see L3 in Alternative 1).

#### Forest Management

Sales of forest products from noncommercial forestlands would be allowed when compatible with the management objectives of other resource programs (see F4 in Alternative 1).

#### Grazing Management

In accordance with the BLM's grazing management policy (BLM instruction memorandum WO8-22-92), the Buffalo Resource Area would:

Develop 14 allotment management plans (AMPs) on "I" (Improve) category allotments covering about 108,000 acres in the South Big Horns. Six AMPs on about 40,400 acres would be completed within ten years.

Develop 32 AMPs on "I" category allotments covering approximately 275,000 acres in the Powder River Breaks. Ten AMPs on about 115,000 acres would be completed within ten years.

"I" category allotments are listed in Appendix F.

Develop range improvements on "I" allotments as shown in table 2.

Types and numbers may change and would be based upon development of AMPs.

Before developing site-specific AMPs, the BLM would conduct baseline inventories on an allotment-by-allotment basis. The inventories would consist of an Order 3 soil survey, application of range suitability criteria, and mapping of vegetation and ecological range condition.

Data from baseline inventories would be used to establish specific allotment management objectives and resource monitoring study sites and to identify or quantify resource conflicts.

Rangeland monitoring studies would be initiated on allotments to obtain data on forage production, forage utilization, actual use, wildlife information, climate (precipitation), range condition trends, and other information. Adjustments in authorized use would be made when necessary to bring livestock grazing into line with grazing capacity; however, such adjustments would be made only after the results of these studies had been evaluated and a grazing allotment management plan had been implemented.

Allotment management plans, habitat management plans, and range improvements would be developed in cooperation with lessees and other affected landowners. The effects of these programs would be addressed in individual site-specific environmental assessments when the



TABLE 2  
RANGE IMPROVEMENT SCHEDULE UNDER ALTERNATIVE 2

<u>Kind of Improvement</u>	<u>South Big Horns</u>		<u>Powder River Breaks</u>	
	<u>Total Planned</u>	<u>Number Completed<sup>1/</sup> in Ten Years</u>	<u>Total Planned</u>	<u>Number Completed<sup>1/</sup> in Ten Years</u>
Reservoirs	6	2	11	5
Pipelines (miles)	7	6	31	15
Springs	6	2	4	3
Catchments	5	1	5	2
Wells	6	5	19	10
Fence (miles)	39	20	51	35
Vegetation manipulation (acres)	750	500	1,000	700

WILDLIFE IMPROVEMENT SCHEDULE UNDER ALTERNATIVE 2

Streamside Improvements (miles)	3	1
Guzzlers	1	2
Vegetation manipulation (acres)		
Sagebrush	100	100
Aspen	50	

<sup>1/</sup> Proposed improvements on first group of 16 "I" allotments. These allotments are listed in Appendix F.



## DESCRIPTION OF THE ALTERNATIVES

location of a given action was determined. Appropriate federal and state government agencies and other interested parties would be consulted.

Adjust the number and season of use if necessary on 11 allotments totaling 12,606 acres in the South Big Horns. No AMPs would be prepared for these allotments because these allotments contain less than 640 acres of BLM-administered surface.

Enter into cooperative range management and/or improvement agreements with the Soil Conservation Service and ranch operators on allotments categorized "M"(maintenance) and "C" (custodial).

Management objectives on "M" category allotments would not change to any degree. The same livestock numbers, class, and seasons of use would continue to be permitted. Flexibility in livestock numbers and turnout date would be allowed.

No grazing systems would be initiated by BLM on "C" category allotments; however, grazing might be deferred each year until a key species reached the seed-ripe stage. This would prevent deterioration of present range condition (See G3 in Alternative 1).

### Recreation and Visual Resource Management

Apply the following ORV designations in addition to the designations for Johnson County. (see R3 in Alt. 1)

	Acres
I. Open Areas	0
II. Closed Areas	0
III. Limited Areas	236,067
A. Vehicle travel is permitted only on existing roads and vehicle routes.	
(Campbell County)	189,267
(Sheridan County)	50,730

### Acres

B. Vehicle traffic is permitted only on roads and vehicle routes designated by BLM.

(Campbell County)	46,800
(Sheridan County)	0
1. Fortification Creek	16,320
2. Rochelle Hills	17,880
3. Weston Hills	7,160
4. Four Corners and Dry Creek Areas	5,440

**Total Public Lands in Two Counties 236,067**

### Wildlife Habitat Management

#### Fencing of Reservoirs

The BLM would fence reservoirs regardless of size and spring improvements on public land if such fencing would improve water quality or wetland habitat. Access to water for livestock would be provided in each case by either a pipe and tank or a water gap. (see WL1 - Alt. 1)

#### Allocation of Vegetation

On crucial elk range in the south Big Horns (74,840 acres, of which 26,000 acres are BLM-administered surface), existing vegetation and forage would be allocated first to meet the cover and feed requirements for elk in accordance with population objectives set in the Wyoming Game and Fish Department strategic plan. Livestock grazing would be reduced on crucial elk range where monitoring studies showed there was insufficient forage for elk. Additional forage that would be available as a result of more intensive range management would be available for multiple uses (i.e. watershed, livestock, etc.).

In the Powder River Breaks, both existing and any new forage would first be allocated to meet current livestock demand. Any remainder would be allocated to other multiple uses (i.e. wildlife, watershed, etc.). This allocation would also apply to the 19,000 acres of crucial elk habitat in the Powder River Breaks.



## DESCRIPTION OF THE ALTERNATIVES

### Improvement of Riparian Habitat

Improve riparian habitat on 3 miles of streams in the southern Big Horns and 1 mile of stream in the Powder River Breaks. Improvements could include fencing, management of grazing use, pool development, and stream bank stabilization.

### Fire Management

The use of prescribed fire would be permitted throughout the Resource Area to (a) control brush in favor of desired species, (b) reduce hazardous fuel buildups to reduce intensity at wildfires and break up continuities of fuels, (c) improve wildlife habitat, (d) improve watershed, (e) enhance tree generation by reducing competition, preparation of seedbeds, and speeding up the decomposition process.

Provide for limited fire suppression where suppressing fires is extremely difficult or where the values threatened do not warrant the expense associated with normal suppression methods. Low values areas are those identified as Value Class II (on a scale of 1 - low to V - high). Full fire protection would continue to be provided where fires threaten human life and property and high value resources.

### Wilderness

The BLM would recommend that Gardner Mountain, North Fork, and Fortification Creek WSAs be declared unsuitable for wilderness designation. The WSAs would be managed according to the BLM's interim management policy until Congress made a decision on designation or nondesignation. If Congress should decide to accept the BLM's recommendation and release these areas from WSA status, the areas would then be managed for multiple use.

The special provisions from Alternative 1 would continue to be applied. However, activity plans could be proposed for each area if special attention is required to manage resources. The Area Manager would identify the need for, develop and implement activity plans.

### ALTERNATIVE 3 (Emphasize Livestock Forage Production and No Wilderness)

The management under Alternative 3 would be identical to that described for Alternative 2, except:

#### Grazing Management

In the South Big Horns existing forage would be allocated to meet and maintain the current demand for livestock, including the 26,000 acres of crucial elk range. Additional forage that would result from implementation of more intensive range management would also be allocated first to livestock production.

In the Powder River Breaks, there would be no change from the description in Alternative 2.

### ALTERNATIVE 4 (Emphasizes Protection of Wildlife Habitat and Watershed Values and No Wilderness)

The management under Alternative 4 would be the same as that described for Alternative 2 except for the following changes:

#### Soil, Air, and Water Management

Defer livestock grazing in the spring and summer on areas of severe erosion hazard (see map 5). This would involve about 10,000 acres in the South Big Horns and about 80,000 acres in the Powder River Breaks. Thirty (30) miles of fence would be required to manage livestock. The cost would be about \$3,000 per mile.

#### Wildlife Habitat Management

If monitoring studies indicate, allocations for vegetation and forage would be made to meet the cover and feed requirements for elk on 26,000 acres of crucial elk range in the South Big Horns, and on 19,000 acres of crucial elk range in the Powder River Breaks (see map 6). Livestock



## DESCRIPTION OF THE ALTERNATIVES

grazing would be reduced on the crucial ranges where studies showed there was insufficient forage for elk.

### **ALTERNATIVE 5 (Balanced Resource Use and Partial Wilderness in the North Fork)**

The management under Alternative 5 would be the same as that for Alternative 2 except:

#### **Wilderness**

Gardner Mountain and Fortification Creek WSAs would be recommended as unsuitable for wilderness designation and 2,457 acres of the North Fork WSA would be dropped due to manageability considerations and recommended as unsuitable. The remaining 7,632 acres in the North Fork WSA would be recommended as suitable for wilderness designation.

All three WSAs would be managed according to the BLM's interim management policy until Congress decided whether or not to accept the recommendation for partial designation. If Congress should decide to accept the BLM's recommendation, the Gardner Mountain and Fortification Creek WSAs and the nondesignated portion of the North Fork WSA would then be managed

for multiple use. The area designated wilderness would be managed according to the BLM's wilderness management policy, which is summarized in Appendix E. Wilderness designation would cause changes in the management of energy and minerals, nonenergy realty, recreation, and forestry within the designated area.

### **ALTERNATIVE 6 (Balanced Resource Use and All WSA Recommended for Wilderness)**

#### **Wilderness**

The management under Alternative 6 would be the same as that described for Alternative 2 except: Gardner Mountain, North Fork, and Fortification Creek, would be designated wilderness. If Congress should decide to accept the BLM's recommendation and designate the WSAs as wilderness, they would then be managed according to the BLM's wilderness management policy, which is described in Appendix E.

Until Congress decided whether to accept the recommendation for wilderness designation, the WSAs would be managed according to the BLM's interim management policy.



TABLE 3  
SUMMARY OF ENVIRONMENTAL CONSEQUENCES OF EACH ALTERNATIVE

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
<u>Physical and Biological Features</u>						
Geology	No effect	No effect	No effect	No effect	No effect	No effect
Climate	No effect	No effect	No effect	No effect	No effect	No effect
Air Quality	No significant effect	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Topography	No significant effect	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Water	224 acre-feet of water per year consumed for oil and gas well drilling---2,240 acre-feet in ten years.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
	Water quality and storage capacity would decline on unprotected stock-ponds.	Storage and water availability would increase; quality would be maintained on new storage projects and improved in old storage projects.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2 except new development projects would benefit wilderness.	Same as Alternative 5
	Continuing deterioration of 4 miles of streamside through bank erosion and loss of riparian vegetation.	Stabilizing stream banks in South Big Horns and Powder River Breaks water-sheds would improve water quality over long term.	Same as Alternative 2	Water quality in Powder River Breaks would improve through eliminating surface development and livestock use on 90,000 acres of high erosion hazard areas in spring and early summer (March 1 to June 30).	Concentration of visitors in North Fork WSA would probably cause decrease in water quality.	Concentration of visitors in North Fork and Gardner Mountain would probably cause decrease in water quality.



TABLE 3, Page 2

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
Physical and Biological Features Soils	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
	Disturbance would increase to about 26,500 acres per year as new range improvements would be constructed.	Disturbance would increase to about 26,500 acres per year as new range improvements would be constructed.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 1	Same as Alternative 1
	Early grazing in areas not deferred; therefore, soil erosion would increase in long term.	Grazing systems implemented and erosion should decrease except on high erosion areas.	Same as Alternative 2	Soil erosion would be further reduced by deferment of grazing and surface development on 90,000 acres of high erosion hazard. No grazing would take place March 1 to June 30.	Same as Alternative 2	Same as Alternative 2 and if WSAs designated wilderness, restriction on development very beneficial to fragile soils in Fortification Creek WSA.
Vegetation	About 26,000 acres of native vegetation would be lost in 10 years. 16,000 acres would be reclaimed. Reclamation would convert native vegetation to grassland.	About 50 more acres per year lost.	Same as Alternative 2	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1 but development limited to prior rights on 28,931 acres in three WSAs if designated wilderness.
	Loss of riparian and wetland vegetation at small stock ponds and on 4 miles of streams.	Stabilize 4 miles of stream (bank sloughing) and improve riparian and wetland vegetation along ponds and streams.	Same as Alternative 2	Same as Alternative 2	Wilderness riparian area would be protected. High recreation use in wilderness could affect riparian areas.	Riparian areas in three WSAs would be protected. High use of wilderness could affect riparian areas in North Fork and Gardner Mountain.
	No vegetative manipulation would occur. Opportunity lost to improve range production.	In ten years, 1,400 acres of sagebrush would be converted to grassland. Increase in forage production expected to be 50 to 70%.	Same as Alternative 2	Vegetative manipulation and forage increase would be planned; allocated to favor wildlife.	Natural vegetative systems would be preserved if part of North Fork designated wilderness.	Natural vegetative systems would be preserved if all three WSAs designated wilderness.



TABLE 3, Page 3

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
Physical and Biological Features						
Vegetation (continued)	No short-term change in present vegetative systems. Present condition would decline over long term.	Intensive rangeland management practices would be beneficial. Range condition would be maintained or improved.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2 except if part of North Fork designated wilderness, no systems would be implemented there.	Same as Alternative 2 except if WSAs designated wilderness, no systems would be implemented there.
Wildlife	No opportunity to increase riparian-wetland habitat on small reservoirs (less than 5 acres).	Riparian habitat quality and quantity would improve.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2 unless part of North Fork designated wilderness and site-specific problems compromised wilderness values.	Same as Alternative 5 except possible designation would apply to all three WSAs.
	Continued siltation would reduce fish habitat in streams.	Reduction of siltation should improve quality of fish habitat in long term.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2
	Range condition on about 16,000 acres of crucial elk habitat would remain in less than good condition.	Condition on 16,000 acres of crucial elk range would improve from less than good to good condition in South Big Horns and Powder River Breaks.	Forage and cover for elk would decline on 45,000 acres of crucial elk habitat. Increase winter mortality for elk.	Forage and cover requirements for elk would improve from less than good to good condition. Elk numbers would increase in the long term.	Positive benefit for wildlife if part of North Fork designated wilderness.	Significant benefit for wildlife if all WSAs designated wilderness.
	No change.	Intensive grazing management systems would have varying effects on wildlife, mostly beneficial.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2
	Surface development would continue to displace wildlife; cumulative effects not quantifiable.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Wilderness designation would tend to protect wilderness values.	Same as Alternative 5



TABLE 3, page 4

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
<u>Cultural Resources</u>	No significant effect	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Greater protection of cultural resources if part of North Fork designated wilderness.	Greater protection of cultural resources if WSAs designated wilderness.
	2,600 acres closed to 1872 Mining Law.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
<u>Economics</u>	About \$1.24 returned for each dollar invested to maintain present livestock numbers and projects.	Implementing intensive grazing systems and range improvements would provide approximate net increase of about 6,000 AUMs. Expected return of \$1.25 for each dollar invested.	Positive benefit to ranch operators in that all additional AUMs would be allocated to livestock. Same return as Alternative 2 for investment.	Allocation of all forage to wildlife on 45,000 acres of crucial elk range would have economic impact on ranchers. Same investment as Alternative 2.	Economic effects of wilderness cannot be quantified.	Economic effects of wilderness cannot be quantified.
	Additional cost of mitigating effects of surface development would provide long-term benefit.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Wilderness designation would increase the cost of development of a prior right.	Same as Alternative 5
<u>Social Attitudes and Lifestyles</u>	Public concern for land disposal minimal.	Sale of the public land may create concern for various users of the public lands.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2
	Some wilderness support locally but adjacent landowners oppose designation.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Some support locally for designation of North Fork WSA as wilderness, but majority of local comments oppose designation. National attitudes are evenly divided.	If all three WSAs designated wilderness there would be serious local opposition. Designation might change lifestyles of local landowners.



TABLE 3, page 5

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
<u>Land Ownership</u>						
	Some wilderness support locally but adjacent landowners oppose designation.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Possible change in ownership resulting from access acquisition.	Same as Alternative 5 plus acquisition of state land inside WSA.
	About 5,000 acres available for disposal in Campbell County.	95,000 acres of isolated tracts that might be available for disposal in Campbell County. Another 90,000 could be available for potential disposal in Johnson and Sheridan counties.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2
<u>Land Use</u>						
	Land uses requiring construction and surface disturbance would be subject to these restrictions: No occupancy on 47,000 acres; seasonal occupancy on 48,000 acres; potential occupancy on 276,000 acres.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1 except no occupancy on 90,000 acres of severe erosion hazard from March 1 to June 30.	Same as Alternative 1 except that no disturbance would be permitted in designated wilderness unless prior to right.	Same as Alternative 5
<u>Mineral Development and Production</u>	23,000 acres closed to 1872 Mining Law; 6,000 acres closed to oil and gas leasing; 68 billion tons of high/moderate coal available for further leasing consideration.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Except for valid existing rights the North Fork WSA would be withdrawn from mineral activity January 1, 1984, if designated by then. Mineral potential is considered low in North Fork.	Except for valid existing rights, all WSAs would be withdrawn from mineral activity January 1, 1984 if designated by then. Energy mineral potential is high in Fortification Creek, low in North Fork and Gardner Mountain.



TABLE 3, page 6

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
Livestock Grazing	57% of rangeland would remain in less than good condition.	Estimated increase of 6,000 ADUs above maintenance level in 15 to 25 years. Preference for livestock on any increase in forage production in the Powder River Breaks.	Same as Alternative 2 could create problem on 90,000 acres of high erosion area in spring.	11,000 ADUs deferred until summer in high erosion area. Vegetation would be better established before grazing.	Same as Alternative 2 except no increase in ADUs in North Fork WSA, if designated wilderness.	No ADU increases in any of the three WSAs, if designated.
	Existing range improvements maintained, but no new projects. Poor livestock distribution.	Range improvements will improve livestock distribution and result in better range utilization.	Same as Alternative 2	Same as Alternative 2	The construction of new rangeland improvements is permissible if determined to be necessary for the purpose of resource production (rangeland and/or wilderness) and the effective management of these resources, rather than to accommodate increased numbers of livestock.	Same as Alternative 5
	No change in resource condition.	Range condition and forage production would improve on 155,000 acres of "I" category allotments.	Same as Alternative 2	Same as Alternative 2	No change since allotments in the WSA are in good condition.	No change since allotments in the WSA are in good condition.



TABLE 3, page 7

Resource Program	No Action Alternative 1	Balanced Use Alternative 2	Maximum Production Alternative 3	Resource Protection Alternative 4	Partial Wilderness Alternative 5	All Wilderness Alternative 6
Livestock Grazing (continued)	No change in resource condition.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Range in North Fork WSA is in good condition; allotments would be maintained.	Range in Gardner Mountain WSA is in good condition; allotments would be maintained.
Timber Harvesting	In 10 years, 7 to 10 MMBF would be harvested	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Possible harvest in Gardner Mountain in 10 to 15 years.	If WSAs designated wilderness, no harvest in any WSA.
	Wood products noncommercial forest would not be available for use.	Wood products on non-commercial forests would be available.	Same as Alternative 2	Same as Alternative 2	Wood products available for use in Fortification Creek and Gardner Mountain.	If WSAs designated wilderness, no wood products available from any WSA.
Recreation	Public land in Campbell and Sheridan counties would remain open to ORV use. Site-specific erosion problems would continue.	ORV designations would be established for Campbell and Sheridan counties. Erosion problems may lessen.	Same as Alternative 2	Same as Alternative 2	If designated wilderness, North Fork WSA would be closed to motorized recreation.	If designated wilderness, all WSAs would be closed to motorized recreation.
Wilderness	Maintain WSA status. Managed according to interim plan, thus no change.	Wilderness values would be irretrievably lost in Fortification Creek within 1 to 3 years after non-designation.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2 except 7,632 acres added to wilderness system	28,931 acres added to wilderness system including one ecosystem that is not represented in the Wilderness preservation system.
Fire Management	Allows vegetation manipulation by fire in Middle Fork Unit only.	Fire would be used to manipulate vegetation as prescribed in habitat or allotment management plans.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2



# CHAPTER 3

## THE AFFECTED ENVIRONMENT

### RESOURCE AREA PROFILE

#### Physical and Biological Features

##### Air Quality

Present ambient air quality is good. Exceptions are localized areas at Gillette and Sheridan. Reduction in air quality in these areas is generally attributed to urban expansion and associated construction and traffic. (Air Quality Assessment Study, 1981)

Ambient air quality standards are exceeded at various times of the year in Campbell County. This is generally confined to a narrow east-west strip extending from 15 to 20 miles north of Gillette and south to Wright. Intense energy-related activity (coal mines and oil and gas development) and traffic are the major contributors.

##### Topography

Much of the Buffalo Resource Area (east of the Big Horn Mountains) is characterized by rolling hills and flat valleys. In the Powder River Breaks, slopes are steep, ranging from 15% to more than 25%. Hillsides appear terraced and hilltops are at uniform elevations.

The south Big Horn Mountains are characterized by gentle slopes to steep slopes of more than 25%. There are prominent cliffs and deep, precipitous canyons such as the Middle Fork and North Fork canyons.

##### Water

The Buffalo Resource Area is drained in the northern and central portions by the Powder River (which drains more than 65% of the area), on the west by the Little Big Horn and Tongue rivers (14% of the area), and on the east by the Belle Fourche (11%) and Little Powder (3%). All of these rivers are tributaries of the Missouri River system and have many perennial tributaries. Most perennial streams head within the Big Horn Mountains to the west.

The South Big Horns issue area contains about 50 miles of perennial streams on public land. These streams and associated habitats represent an important fish and wildlife habitat type on both public and private land. Intermittent streams, those flowing sufficiently long to support growth of riparian vegetation, also provide important wildlife habitat.

Nearly 5% (3 miles) of the perennial streams examined on BLM-administered public land in the South Big Horns are in poor condition or declining in stability and habitat values for both fish and wildlife (BLM stream inventory study). According to the inventory, 90% of the streams that are stable are in fair to good condition, essentially because topography and natural barriers keep livestock grazing at a minimum.

Perennial stream habitat on public land in the Powder River Breaks is limited. About 1 mile is in poor condition (map 6). Livestock usually use riparian areas heavily from spring through fall.

Many of the drainages in the breaks are in poor condition and the only forage available for livestock and wildlife is on the ridgetops and upland areas. Intermittent stream drainages are characterized by dead or dying cottonwood trees, an absence of young trees and nonwoody vegetation, and deepened channels caused by erosion, indicating poor condition.

The South Big Horns area contains about ten livestock ponds on public lands. These provide approximately 25 acres of wetland habitat for wildlife. No stock ponds on public land have been stocked with game fish. The size and the presence of aquatic vegetation influence the use of these ponds by waterfowl, which occurs primarily during migration. Elevation and the lack of suitable cover limit waterfowl nesting.

In the Powder River Breaks, approximately 50 stock ponds on public land provide about 125 acres of wetland habitat for wildlife. Three stock ponds have been stocked in past years with rain-



## THE AFFECTED ENVIRONMENT

bow trout and largemouth bass. Fish transplants are dictated by reservoir size, depth, and public access.

Domestic and livestock wells usually are low yield (1 to 25 gpm). Water for domestic and livestock use generally is found at depths of less than 1,000 feet and occasionally is obtained from flowing springs and wells. Industrial wells are used primarily for secondary recovery of petroleum. Abandoned oil and gas wells that are nonproducers are sometimes converted to livestock and wildlife water sources.

**Wetlands.** Wetlands include the waters and vegetation associated with perennial and intermittent streams, reservoirs, springs, seeps, and canals. They are used intensively by livestock and are recognized as important habitats for fish and wildlife. The number of mammals and non-game bird species is highest around water sources with diverse vegetation including trees, shrubs, ground cover, and aquatic plants.

### Soils

The Wyoming General Soil Map, published by the University of Wyoming (1977), divides the three-county region into 12 mapping units. The survey was based primarily on physiographic, topographic, and climatic features. The soils were identified at the great group level of the soil taxonomy. This provides general information on soil characteristics (see map 8).

The statewide General Soil Map is complemented by more detailed general soil maps prepared for each county. These maps show a higher degree of detail than the statewide map because their scales are larger; however, both the state and county based maps are composed of very broad delineations, each covering many townships. The data are intended to be regionally applicable. Site-specific interpretations are not possible from the information on these maps.

### Vegetation

Vegetation types for most of the resource area are illustrated on map 9.

Most of the South Big Horns area lies in a 15-19 inch precipitation zone. The major vegetation types within this zone are grasslands, sagebrush, mountain shrub, forest, and riparian/wet meadow. The estimated acreage of each vegetation type is shown in table 4.

Most of the Powder River Breaks issue area is in a 10-14 inch precipitation zone. The dominant vegetation types within this zone are grasslands, sagebrush, and conifer woodland. Conifer woodland is restricted to the higher elevations and more mesic sites. The estimated acreage of each vegetation type is shown in table 5.

Threatened and Endangered Plant Species. No threatened or endangered plants are known to exist in the resource area.

**TABLE 4**  
**VEGETATION TYPES IN THE SOUTH BIG HORN ISSUE AREA**

Vegetation Type	Acreage	Percent
Grassland	77,947	30%
Sagebrush	64,956	25%
Mountain shrub	18,188	7%
Forest	64,856	25%
Riparian and wet meadow	10,392	4%
Other	23,384	9%
	<b>259,823</b>	<b>100%</b>

**TABLE 5**  
**VEGETATION TYPES IN THE POWDER BREAKS ISSUE AREA**

Vegetation Type	Acreage	Percentage
Grassland	190,860	30%
Sagebrush	386,807	61%
Conifer Woodland	6,000	1%
Other	55,233	8%
	<b>638,900</b>	<b>100%</b>



## THE AFFECTED ENVIRONMENT

### Wildlife

**Fish** The Buffalo Resource Area contains both coldwater and warmwater fisheries. Warmwater fish (largemouth bass, rock bass, black bullhead) are restricted to reservoirs and the Powder River. Coldwater fish (rainbow, brown, brook, and cut-throat trout) are found in streams in the South Big Horns and in various stock ponds or reservoirs.

All 50 miles of perennial streams on public land in the South Big Horns contain one or more species of trout. Nongame fish are restricted to the middle and lower reaches. Fish habitat is in poor condition on 3 miles of streams and or fair condition on 10 miles of streams. The remainder is in good condition.

Table 6 shows fisheries habitat, land statistics, and population data for streams in the South Big Horns issue area.

Riparian areas provide excellent wildlife habitat for a variety of species. At present, riparian areas, especially those near small stock ponds, are in poor condition from overuse.

**Big Game** Mule deer are found throughout the resource area—the total number is estimated at 67,000. The better mule deer habitats are in the South Big Horns, the Powder River Breaks north of I-90, the timbered breaks along the Little Powder River, and the forested scoria hills in northern Campbell County and Sheridan County.

White-tailed deer, which are restricted to the major drainages that support woody riparian habitat, number about 13,000 in the resource area.

Mule deer are the most abundant big game animal in the South Big Horns. The post-hunt season population in this area is 6,600. The goal of the Wyoming Game and Fish Department for the herd units in this area is to maintain the existing numbers.

Mule deer winter on the foothills and broken slopes in the South Big Horns and congregate on agricultural land during late summer and fall. Deer rely on shrub and forb species for much of

their diet. Competition occurs at certain times of the year when diets overlap. For example, the Worland, Wyoming, District of the BLM reports that the estimated dietary overlap between deer and domestic sheep is 53%; between deer and cattle it is 15% (USDI, BLM 1982). These percentages probably would apply to the Buffalo Resource Area.

The post-season mule deer population in the Powder River Breaks is estimated at 4,500. Population and productivity are below capacity, with local exceptions such as Fortification Creek. The Wyoming Game and Fish Department goal is to increase mule deer numbers in this area to 6,500. Mule deer use the riparian zones along the Powder River and associated drainages in summer and fall, but in the winter they are found scattered throughout the breaks where browse and thermal cover are present.

Antelope are found throughout the resource area. The largest migratory herd in Wyoming is in southern Johnson County and Campbell County. The Wyoming Game and Fish Department estimated the antelope population in the resource area was 42,000 before the 1980 hunting season.

The estimated yearlong antelope population in the South Big Horns issue area is 325. The Wyoming Game and Fish Department goal for most of the area is to maintain the existing numbers. Although localized migration occurs during normal winters, the only significant antelope movement is along the North Fork of the Powder River, where populations move from the higher elevations in the summer to lower elevations during winter (Wyoming Game and Fish Dept. 1982).

Water does not seem to be a limiting factor on antelope numbers, but populations are limited by the availability of preferred habitat.

The estimated yearlong antelope population in the Powder River Breaks is 3,100. The Wyoming Game and Fish Department's goal, except for localized areas, is to maintain the existing numbers. Although localized migration occurs during normal winters, antelope have been



TABLE 6  
FISH HABITAT AND POPULATION DATA FOR STREAMS  
SOUTH BIG HORNS ISSUE AREA

Location	Miles BLM	Miles State	Miles Private	Total Miles	Major Species <sup>a</sup>	Population Status on BLM
Buffalo Creek	3.5	1.0	7.0	11.5	BT	1,440 trout per mile 299 lb./acre
Middle Fork Powder River	9.0	3.0	5.0	17.0	RT, BT, BrT, LD	2,250 trout per mile 151 lb./acre
Blue Creek	1.5	0.5	6.0	8.0	BrT, RT, BT, LD, MS	1,000 trout per mile
Beaver Creek	5.5	0	3.0	8.5	BT, RT, WS, LS, MS, LD, FHC	740 trout per mile 181 lb./acre
Red Fork Powder River	2.0	1.0	7.0	10.0	RT, BT, BrT, MS, LD, WS, LD	420 trout per mile 67 lb./acre
North Fork Red Fork	4.0	0	2.5	6.5	RT, BrT, MS, LD	1,562 trout per mile 115 lb./acre
Beartrap Creek	3.0	2.0	5.5	10.5	RT, BrT	1,162 trout per mile
Pass Creek	3.0	0.5	5.0	8.5	RT, BT	unknown
North Fork Powder River	9.0	2.5	15.0	26.5	RT, BT	2,145 trout per mile
Middle Fork Crazy Woman	1.5	1.0	13.5	16.0	RT, BT, BrT	640 trout per mile 45 lb./acre
Poison Creek	2.5	0	3.0	5.5	RT, BrT, BT	1,330 trout per mile 135 lb./acre
Dull Knife Reservoir		130 surface acres			BT, RT, CT	
South Fork Red Fork	4.5	0	4.5	9.0	RT, BT, BrT	989 trout per mile 74 lb./acre
Beaver Creek #2	1.0	0.5	4.0	5.5	BT	

SOURCE: Wyoming Game and Fish Department, 1978

a. Legend for Major Species:

RT = rainbow trout (*Salmo gairdneri*)  
 BT = brown trout (*Salmo trutta*)  
 BrT = brook trout (*Salvelinus fontinalis*)  
 CT = cutthroat trout (*Salmo clarki*)  
 MS = mountain sucker (*Catostomus platyrhynchus*)  
 LD = longnose dace (*Rhinichthys cataractae*)  
 WS = white sucker (*Catostomus commersoni*)  
 LS = longnose sucker (*Catostomus catostomus*)  
 FHC = flathead chub (*Hybopsis gracilis*)



## THE AFFECTED ENVIRONMENT

known to cross the Powder River during severe winters and travel several miles in search of suitable cover and forage.

Antelope are restricted to rolling topography and are seldom found in the rough, broken "breaks" habitat on both sides of the Powder River.

Livestock compete with deer and antelope for forage, but this competition does not appear to be a serious problem at present in the Buffalo Resource Area.

Deer rely on shrub and forb species for much of their diet. Competition occurs at certain times of the year when diets overlap. For example, the Worland, Wyoming District of the BLM reports that estimated dietary overlap between deer and domestic sheep is 53%; between deer and cattle it is 15% (USDI, BLM 1982).

Elk are common in the South Big Horns. There are small populations in the Fortification Creek and Rochelle Hills area.

Elk are found in the South Big Horns year round. They number about 1,650; winter populations fluctuate between 655 and 1,450. Elk migrate from higher elevations in the Bighorn National Forest and Beartrap area to the traditional crucial winter ranges along the North Fork of the Powder River, Beaver Creek, and the Middle Fork of the Powder River. Little is known about the migration patterns near the Middle Fork of the Powder River and Beaver Creek, where elk numbers have decreased in recent years.

Approximately 100 elk inhabit the Fortification Creek area in the Powder River Breaks. The elk herd was supplemented by transplants in the early 1950s. The goal of the Wyoming Game and Fish Department is to increase the herd size to 300 head and allow for a limited quota hunting season.

The range is in less than good condition on 29,000 acres of crucial elk habitat in the South Big Horns. Elk and livestock compete directly for many of the same forage species, and elk com-

pete with livestock for space, particularly in the South Big Horns allotments, which receive heavy summer livestock use.

Bighorn sheep are confined to a small part of the South Big Horns in Johnson County. The survival of Bighorn sheep in this area is questionable because lungworm and pneumonia, poaching and predation have decimated the population. Approximately three animals remain.

Mountain lions are found in the rough, broken canyon country in the South Big Horns. It is estimated that 15 to 25 lions inhabit the South Big Horns; the total in the entire resource area is estimated at 50 (Wyoming Game and Fish Department, personal communication).

**Small Game** Small game includes cottontail rabbits, red squirrels, sage grouse, sharp-tailed grouse, blue grouse, Merriam's turkey, chukar partridge, Hungarian partridge, ring-necked pheasants, and mourning doves.

Sage grouse, blue grouse, ruffed grouse, and chukars are common in the South Big Horns where suitable habitat occurs. Blue and ruffed grouse are found in the forested areas; chukars and sage grouse usually are at lower elevations.

Sage grouse and sharp-tailed grouse are found in the Powder River Breaks; however, their populations have declined significantly in the past three decades. Some local ranchers attribute the decline to extensive grasshopper control programs in the 1950s, however, the primary cause has been sagebrush eradication programs and extensive energy development.

Scattered numbers of wild turkeys are found throughout the resource area along major drainages and in ponderosa pine habitat.

**Waterfowl** The many livestock ponds and streams provide a substantial amount of nesting habitat for waterfowl, especially mallards, gadwalls, and blue-winged teal. Small stock ponds also are significant for waterfowl breeding.



## THE AFFECTED ENVIRONMENT

**Raptors** Many raptor species are common in the resource area. Common nesters include golden eagles, red-tailed hawks, falcons, great horned owls, and kestrels.

Species of high federal interest in the resource area are burrowing owl, osprey, merlin, ferruginous hawk, prairie falcon, and golden eagle.

**Threatened and Endangered Species** Bald eagles are fairly common winter residents in the resource area. They usually are found along woody riparian zones.

Peregrine falcons may migrate through the resource area. There are no known nest sites in the resource area.

There are no confirmed reports of black-footed ferrets in the resource area, but there have been several unconfirmed sightings. Black-tailed prairie dog towns, which are potential ferret habitat, are found on approximately 2,000 acres of public land in the resource area (USDI, BLM 1977).

There has been no declaration of official critical habitat for threatened or endangered species in the resource area.

### Cultural Resources

Cultural resources in the resource area include documented evidence of human activity for the past 12,000 years. This evidence is manifested in campsites, animal kill sites, rock art panels, stone circles, firepits, tool stone quarries, religious areas, and special use areas for vegetal food processing or animal butchering. An important area is the Outlaw Cave archeologic district.

Site densities, as inferred from a sampling inventory of Sheridan and Johnson counties, average 1.6 sites per square mile in these two counties (Reher 1979). Densities are greater in areas that include the foothills and forested portions of the mountains. Here the density is approximately 5 sites per square mile, and it is suspected that the density is closer to 10 to 15 sites per square mile along canyons with flowing

water (Reher 1979). Occurrences of even greater site densities—up to 30 sites per square mile—have been reported for portions of the Red Wall area (Jameson 1977).

Among important historical sites are Cantonment Reno and Dull Knife Battlefield, which are listed on the National Register of Historic Places, and the Bozeman Trail and Crazy Woman Battlefield, which are eligible for, but are not listed in the National Register.

### Economics

Employment and income figures for 1980, with projections through 1995, are presented in table 7. Population figures for 1980, with projections through 1995, are presented in table 8.

In general, development of energy minerals (coal, oil, gas) contributes significantly to the economic health of the resource area. Thousands of jobs and millions of dollars in income and tax revenues are generated through the energy industry.

### Social Attitudes and Lifestyles

Significant social and cultural changes are under way in the resource area as a direct result of mineral extraction, industrialization, and a growing tourist industry. As population diversity increases, few bonds are being formed between newcomers and long-term residents, whose backgrounds and basic values often are very different. Because of these differences, the two groups often have perceptions of each other that are not complimentary or may be downright hostile.

### Land Ownership

The ownership of surface in the Buffalo Resource Area is presented in table 9 and shown on map 7.

Public lands are reasonably well "blocked" in the South Big Horns, the and Powder River Breaks, the Rochelle Hills, and some areas in northeast Campbell County. The rest of the public lands in the Buffalo Resource Area are in relatively small isolated tracts.



TABLE 7  
EMPLOYMENT AND INCOME--BUFFALO RESOURCE AREA

County/Industry Group	1980		1985		1990		1995	
	Employment <sup>a</sup>	Annual Income <sup>b</sup> (in thousands)	Employment <sup>c</sup>	Annual Income <sup>d</sup> (in thousands)	Employment <sup>c</sup>	Annual Income <sup>d</sup> (in thousands)	Employment <sup>c</sup>	Annual Income <sup>d</sup> (in thousands)
<b>Campbell County</b>								
total	13,406	\$254,753	23,200	\$483,800	25,900	\$556,500	28,200	\$613,400
All mining	4,128	110,818	9,580	257,100	13,630	365,900	15,560	417,700
Coal mining <sup>e</sup>	2,022	54,282	7,440	199,700	11,130	298,800	12,880	345,800
Oil and gas <sup>e</sup>	2,106	56,537	2,110	56,600	2,400	64,400	2,570	69,000
Other mines <sup>e</sup>	--	--	30	800	100	2,700	110	3,000
Construction	2,331	49,428	5,310	112,600	2,860	60,600	2,910	61,700
Manufacturing	163	2,566	170	2,700	170	2,700	170	2,700
T.U.C. <sup>f</sup>	828	17,762	1,220	26,200	1,640	35,200	1,670	35,800
Wholesale trade	545	10,838	550	10,900	550	10,900	550	10,900
Retail trade	2,157	19,688	2,750	25,100	2,980	27,200	3,110	28,400
F.I.R.E. <sup>g</sup>	349	5,552	430	6,800	460	7,300	480	7,600
All other <sup>h</sup>	2,905	38,121	3,230	42,400	3,560	46,700	3,700	48,600
<b>Johnson County</b>								
total	2,285	\$27,237	2,600	\$31,100	2,700	\$32,400	2,800	\$33,000
All mining	480	8,632	530	9,600	540	9,700	540	9,700
Coal mining <sup>e</sup>	--	--	--	--	--	--	--	--
Oil and gas <sup>e</sup>	455	8,182	460	8,300	460	8,300	460	8,300
Other mines <sup>e</sup>	25	450	70	1,300	80	1,400	80	1,400
Construction	245	3,481	340	4,800	350	5,000	350	5,000
Manufacturing	91	1,278	90	1,300	90	1,300	90	1,300
T.U.C. <sup>f</sup>	85	1,407	90	1,500	90	1,500	90	1,500
Wholesale trade	28	373	30	400	30	400	30	400
Retail trade	413	2,927	430	3,000	440	3,100	450	3,200
F.I.R.E. <sup>g</sup>	94	1,195	100	1,300	110	1,400	110	1,400
All other <sup>h</sup>	850	7,944	980	9,200	1,070	10,000	1,120	10,500
<b>Sheridan County</b>								
total	8,153	\$102,471	9,700	\$124,000	11,200	\$153,700	11,400	\$154,400
All mining	380	9,543	620	15,600	1,510	37,900	1,420	35,700
Coal mining <sup>e</sup>	300	7,534	530	13,300	1,420	35,700	1,330	33,400
Oil and gas <sup>e</sup>	75	1,884	80	2,000	80	2,000	80	2,000
Other mines <sup>e</sup>	5	126	10	300	10	300	10	300
Construction	1,127	18,608	1,390	22,900	1,510	24,900	1,530	25,300
Manufacturing	493	7,256	520	7,700	530	7,800	530	7,800
T.U.C. <sup>f</sup>	306	5,060	320	5,300	330	5,500	330	5,500
Wholesale trade	339	4,854	380	5,400	380	5,400	380	5,400
Retail trade	1,958	15,903	2,310	18,800	2,470	20,100	2,560	20,800
F.I.R.E. <sup>g</sup>	390	5,642	520	7,500	540	7,800	550	8,000
All Other <sup>h</sup>	3,160	35,606	3,620	40,800	3,930	44,300	4,070	45,900

a. Published by the Wyoming Employment Security Commission (WESC). Totals may not add because of statistical differences.

b. Based on weekly average wages as published by the WESC. Totals may not add because of statistical differences.

c. All employment projections are derived from the Powder River input-output model. Figures may not add because of rounding.

d. Based on 1980 weekly average wages. Figures may not add because of rounding.

e. Estimates by Casper District Office.

f. Transportation, utilities, and communications.

g. Financial services, insurance, and real estate.

h. Includes services (motels, hotels, restaurants, theaters, repair services and other services), state and local government, forestry and fisheries, and some agriculture.



TABLE 8  
POPULATION IN THE BUFFALO RESOURCE AREA

	Population <sup>a</sup> 1980	Projected Population		
		1985 <sup>b</sup>	1990 <sup>b</sup>	1995 <sup>b</sup>
Campbell Co.	24,367	43,100	49,800	54,200
Gillette	12,134	21,500	24,800	27,000
Johnson Co.	6,700	8,300	8,600	8,900
Buffalo	3,799	4,700	4,900	5,000
Sheridan Co.	25,048	29,900	34,500	35,100
Sheridan	15,146	18,100	20,900	21,200

a. Final census count, 1980

b. Estimate based on 1980 population-to-employment ratios. Town estimate based on 1980 city-to-county ratios.



TABLE 9  
SURFACE OWNERSHIP AND FEDERAL MINERAL RESERVES  
IN THE BUFFALO RESOURCE AREA

SURFACE OWNER OR MANAGER	BLM		Forest Service		Other Federal		State		Private		Total Acreage
	Acreage	%	Acreage	%	Acreage	%	Acreage	%	Acreage	%	
Sheridan County	50,730	3%	393,399	24%	5,777	1%	139,290	8%	1,031,284	64%	1,620,480
Johnson County	512,051	19%	326,877	12%	1,174	1%	242,730	9%	1,591,728	60%	2,674,560
Campbell County	236,067	8%	158,002	5%	3,031	1%	219,460	7%	2,427,280	79%	3,043,840
Buffalo Resource Area Total	798,848	11%	878,278	12%	9,982	1%	601,480	8%	5,050,292	68%	7,338,880
<u>Federal Mineral Reserves under Nonfederal Lands</u>											
Sheridan County	641,520 acres										
Johnson County	1,167,557 acres										
Campbell County	2,125,459 acres										
Buffalo Resource Area Total	3,934,536 acres										

SOURCE: Wyoming Public Land Statistics



## THE AFFECTED ENVIRONMENT

### Land Use

A variety of land uses are authorized annually on the public land through leases, licenses, permits, and grants. All uses that involve surface disturbance and development are evaluated for impacts on resources site-specifically. The proposed use is generally allowed if certain measures are followed to mitigate impacts. However, the proposed use may be rejected or restricted in some manner depending upon location and time of the year. The Area Manager can modify these restrictions and it is estimated that these restrictions are waived about 75% of the time because of no impacts.

### Mineral Development and Production

The Buffalo Resource Area contains some of the largest economically recoverable deposits of coal, oil, gas, and uranium in the United States. The BLM currently administers 77% of the minerals in the resource area. These mineral resources are critical to local economies and play a major role in regional and national economies. Approximately 32% of the employed persons in the resource area work in the minerals industry.

**Leasable Minerals** The Buffalo Resource Area contains 231 oil and gas fields, of which 189 are located in Campbell County (see map 1). These fields produce from horizons ranging in age from Mississippian to Late Cretaceous.

The Campbell County portion of the resource area led the state in the number of oil and gas wells drilled in 1980. The resource area as a whole accounts for a significant percentage of the state's total production, having contributed 27% of the crude oil and 16% of the natural gas to Wyoming's total output from 1973 through 1978.

About 800 wells are drilled in the resource area each year, of which about 50 are on public surface. About 250 are on private surface with federal minerals, and about 500 are drilled on private and state surface and minerals.

On an average, development of a well site disturbs about 8 acres. This includes all facilities. About 1 acre-foot of water is used to drill 3,000 feet of depth for an oil well. The average

well depth is 8,500 feet; therefore, water consumption per well is about 2.8 acre-feet (McCoy 1979).

Portions of the BLM-administered public land in the South Big Horns issue area has been leased for oil and gas development. There has been a significant increase in geophysical activity in this area within the last year.

In the Powder River Breaks, oil and gas drilling and production is the principal type of energy development. Development is intensive in the Fortification Creek area. New KGSs have been discovered and new drilling is proceeding at a rapid pace. This area is fragile, and intense development is a high concern. An oil and gas development plan has been prepared and implemented for this area.

The Powder River Basin contains some of the largest accumulations of subbituminous coal reserves in the world. The coal is centered in two general zones: a north-south oriented zone in Campbell County, in which the major producing seams are the Anderson and Canyon which combine in place to form the Wyodak seam and an area north of Sheridan near the Montana state line in which the major producing seams are the Monarch, and Dietz. About 90% of the total coal reserves in the Buffalo Resource Area is federal coal.

To date there are 12 operating coal mines in the resource area, 10 in Campbell County and 2 in Sheridan County. Production in 1980 was about 69 million tons. It is anticipated that about 10 to 14 additional mines will be in production by 1985.

Approximately 782,000 acres containing 68 billion tons of high and moderate potential federal coal is available for further leasing consideration in the resource area (see map 2). Any further leasing of these lands would be subject to the procedures described in 43 CFR 3420.

**Locatable Minerals** Public minerals are available for location and disposition under the 1872 Mining Law. Specific areas withdrawn from mineral location (map 1) are the Middle Fork unit, the Amsden Creek Elk Range, and part of Fort



## THE AFFECTED ENVIRONMENT

McKenzie military reservation. About 20,000 mining locations have been filed for locatable minerals in the resource area.

Approximately 20,000 acres is closed to the 1872 mining law.

Uranium activity currently is low because of depressed market conditions, but uranium has been mined in southeastern Johnson County. There is high potential for economic uranium deposits in southeastern Johnson and southwestern Campbell counties.

Bentonite occurs in economic deposits near the flank of the Big Horn Mountains in southern Johnson County. It has been mined in this area since the 1960s or earlier, and production continues. Production has been as high as 241,000 tons per year.

No economic deposits of strategic minerals have been found in the Buffalo Resource Area, but trace amounts may exist.

Traces of metallic and rare earth minerals are found within rocks of Precambrian age, primarily along fault zones or dikes, or both. Prospecting in the past has been primarily for gold, silver, copper, and nickel.

**Salable Minerals** Sand and gravel are the major construction materials found in the resource area. Sand and gravel deposits are concentrated along major drainages, but they are scarce or absent in much of the northeastern and eastern parts of the resource area.

Scoria, which is used extensively as a substitute for sand and gravel, is used primarily for road construction.

Mineral materials have been in considerable demand in recent years, in proportion to the increase in development of energy minerals. Annual production figures for nonenergy minerals in the resource area are as follows: scoria, 685,000 cubic yards; sand and gravel, 724,000 cubic yards; limestone, 43,415 cubic yards.

At present, 21 sites (Appendix A) are identified as having potential for extraction of sand, gravel,

and scoria in Johnson and Campbell counties. Seven of these sites are competitive sale sites; the rest are designated as free use sites for city, county, and state governments (see map 1).

Extraction of mineral materials disturbs about 20 to 30 acres annually in the resource area. These small mining sites may have a mine life of one to several years. Reclamation is initiated after the mineral material is removed.

There are no known mines or other mineral extraction operations in the South Big Horns at this time. Sand, gravel, and scoria are extracted at several sites in the Powder River Breaks.

### Livestock Grazing

Livestock grazing is the major agricultural pursuit in the Buffalo Resource Area. Rangeland used for grazing occupies 90% of the resource area's agricultural land; dryland farming accounts for 5% and irrigated land about 1%, with the rest devoted to miscellaneous agricultural uses. All of these agricultural pursuits occupy about 87% of the land in the resource area.

There are 920 ranch operations in the resource area. Of these ranches, 380 lease 734,250 acres of BLM-administered land; and 180 operators hold leases containing more than 640 acres each. The present authorized grazing use on public land is 93,044 animal unit months (AUMs). The average stocking rate on public land in the resource area is 8 acres per AUM. The level of use was set using the stocking rates recommended in the Missouri River Basin (MRB) studies (USDI, BLM).

There is one allotment management plan on 6,149 acres in the resource area. The AMP, which is in the Powder River Breaks, is managed with a deferred rotation grazing system. Present range trend monitoring studies indicate no change in present management is necessary.

The amount of livestock forage on public land is 4.5% of the total forage produced from all lands in the resource area; however, the BLM lease lands can be a critical part of individual ranch operations.



## THE AFFECTED ENVIRONMENT

The BLM rangeland is important in satisfying seasonal pasture needs. Additionally, the current lease rate per AUM is less than  $\frac{1}{4}$  the average commercial lease rate for private land in the area. The lower rate results in considerable cost savings to operators who hold large leases.

There are 25 grazing allotments within the South Big Horns issue area encompassing 108,411 acres of BLM-administered public land and 141,964 acres of private and state lease land. An additional total of 9,448 acres of BLM-administered public land is in stock driveways in the South Big Horns (map 10).

Grazing in this area normally begins in June and extends through November. The exact dates depend on a number of factors, of which weather is the most important. Sheep graze on some parts of this area in winter, particularly on sites from which the snow cover is blown off. The diet of livestock on winter pasture normally is supplemented with hay.

The current level of licensed use on BLM leases in the South Big Horns is 11,327 AUMs.

There are 29 grazing allotments in the Powder River Breaks issue area encompassing 247,361 acres of BLM-administered public land and 381,539 acres of state and private land.

The period of livestock use in the Powder River Breaks area varies considerably among individual livestock operations. It is estimated that 20% of the operators in the Powder River Breaks area hold grazing permits on the Bighorn National Forest or own or lease deeded land in the South Big Horn Mountains. These operators generally move most of their stock off their allotments in the summer and come back onto them in the late fall.

Operators who do not control summer pasture in the mountains utilize their BLM lease and adjoining fee lands on a year-round basis. For most of these operations, the period of livestock use on the BLM runs from April through December. The livestock are normally fed hay or other supplemental feed on the winter pasture. The length of time that supplemental feed is put out de-

pends on the severity of winter weather. The current level of licensed use on the public land in the Powder River Breaks issue area is 28,203 AUMs (see map 10).

Range condition is an expression of the current productivity of a range relative to what that range is naturally capable of producing. Range condition is rated good, fair, or poor on the basis of the percentage of desirable, intermediate, and least desirable forage species present.

Allotments in the Big Horns and Powder River Breaks issue areas were inventoried to determine range condition in 1976 and 1977. BLM personnel compiled the range condition ratings in table 10 using that data base. In some cases the data were revised where new data or the professional judgment of area personnel indicated a condition rating different from that determined earlier.

Trend in range condition is the direction of change in range condition. Trend is usually expressed as improving, stable, or degenerating. The apparent direction of range condition trend was determined by comparing the condition ratings made for the MRB studies. In the evaluation of trend, the following indicators of range condition trend were considered: presence, vigor, and reproduction of desirable and less desirable forage species; utilization levels; litter accumulation; and evidence of accelerated erosion. Results of the analysis of range condition trend for each issue area are presented in tables 11 and 12.

Several factors influence trend in range condition. Declining trend in range condition may be caused or accelerated by management practices such as overstocking, improper season-of-use, and poor distribution of use. Other causes are natural factors such as drought, noxious weeds, or pest invasion. Improving trend in range condition generally results when grazing management practices provide for the physiological needs of desirable forage plants.

### Timber Harvesting

The BLM administers about 9% of the commercial forestland in the Buffalo Resource Area,



TABLE 10  
RANGE CONDITION IN THE SOUTH BIG HORNS  
AND POWDER RIVER BREAKS ISSUE AREA

Issue Area	Good		Fair		Poor		Total Acreage
	Average	Percentage	Average	Percentage	Average	Percentage	
South Big Horns	53,474	49%	45,582	42%	9,355	9%	108,411
Powder River Breaks	92,125	36%	143,494	56%	22,042	8%	257,361
Total	145,599	43%	189,076	49%	31,397	8%	365,772

TABLE 11  
TREND OF RANGE CONDITION  
IN THE SOUTH BIG HORNS ISSUE AREA

Range Condition	Stable		Trend Improving		Degenerating	
	Acreage	Percentage	Acreage	Percentage	Acreage	Percentage
Good	43,581	82%	9,554	17%	339	1%
Fair	27,797	61%	8,989	20%	8,796	19%
Poor	5,085	54%	839	9%	3,431	37%
Total	76,463	70%	19,382	18%	12,566	12%

TABLE 12  
TREND OF RANGE CONDITION  
IN THE POWDER RIVER BREAKS ISSUE AREA

Range Condition	Stable		Trend Improving		Degenerating	
	Acreage	Percentage	Acreage	Percentage	Acreage	Percentage
Good	59,976	60%	32,149	32%	8,379	8%
Fair	115,075	80%	19,740	14%	8,378	6%
Poor	13,664	102%	---	---	---	---
Total	188,715	73%	51,889	20%	16,757	7%



## THE AFFECTED ENVIRONMENT

or about 40,000 acres. This forestland, which contains a total volume of about 120 MMBF of sawtimber is concentrated primarily in the southern part of the Big Horn Mountains, with smaller scattered tracts in northern Campbell County, northeastern Sheridan County, and along the steep front range of the Big Horns.

The BLM also administers about 25,000 acres of noncommercial forestlands, which are along the Powder River Breaks in Campbell, Johnson and Sheridan counties, the Tisdale Mountain-Pine Ridge areas near Kaycee, and in the Middle Fork area in the extreme southern part of the Big Horn Mountains.

The South Big Horns issue area contains most of the commercial forestlands on public land in the resource area. The estimated 38,000 acres of commercial forestland in the South Big Horns issue area could provide an annual sustained yield of approximately 2 MMBF. The majority of the commercial forestlands are stocked with ponderosa pine (57%), Douglas-fir (24%), and lodgepole pine (18%).

Demand for forest products from the public land comes primarily from two local sawmills. Additionally, there is increasing demand from small businesses and private individuals for fuelwood, posts, and poles from the BLM-administered forestlands.

### Recreation

Most access to BLM-administered public surface is controlled by private landowners. The lack of access can create intense conflicts between recreation users and landowners.

Areas that have public access, such as the Middle Fork Unit, are used intensively.

Most camping and hunting, the major recreational pursuits, probably occur in September, October, and November during hunting season.

Visitor days per year of recreation on public land are as follows:

(Forest Service - BLM Use figures, 1980)

ACTIVITY	VISITOR DAYS
Camping	19,000
Hunting	14,000
Fishing	4,000
Picnicking	4,000
Hiking	3,000
Winter sports	3,000

It is estimated that the demand for recreation on public land increase at an annual rate of 10%. The South Big Horns and Powder River Breaks areas are used extensively for hunting, fishing, and camping.

The following information on the value of outdoor recreation was extracted from the "Economics: Recreation Values" section of "Affected Environment and Baseline Projections, Buffalo Resource Area," which was prepared by the BLM in April 1982. The report is on file at the Buffalo Resource Area office.

**Resident Demand** Total "willingness to pay" for outdoor recreation by Wyoming residents in the Buffalo Resource Area in 1980 was about \$2,164,000 for about 283,500 visits. This is based on an average of about \$360,000 in "willingness to pay" and an average of about 47,250 visits by Wyoming residents for six outdoor recreational activities. "Willingness to pay" for the average resident outdoor recreational experience in the Buffalo Resource Area was about \$7.60 per visit.

It is estimated that there will be about 470,000 total resident outdoor recreational visits in 1990 and about 500,000 total resident visits in 1995. Holding the average per visit constant at \$7.60 per visit, this will result in about \$3.6 million in "total willingness to pay" for 1990 and 1995, respectively. For the six residential outdoor activities, this results in an average of about 78,000 and 83,000 visits in 1990 and 1995, with "willingness to pay" of about \$590,000 and \$630,000 for the same years.

**Nonresident Demand** Total "willingness to pay" for outdoor recreation for nonresidents of Wyo-



## THE AFFECTED ENVIRONMENT

ming in the Buffalo Resource Area in 1980 was about \$11,290,000 for about 117,200 visits. This is based on an average of about \$2,250,000 in "willingness to pay" for each of five outdoor recreational activities with about 35,400 visits each. The average nonresident outdoor recreational visit was worth about \$63.70 in the resource area in 1980.

Projected recreational use for the resource area in 1990 and 1995 indicates that there will be about 290,000 nonresident recreational visits in 1990 and about 310,000 in 1995. Using a constant \$63.70 per visit, this will result in about \$18.5 million and \$19.7 million in "total willingness to pay" for 1990 and 1995, respectively. For the five nonresidential outdoor activities, this results in an average of about 58,000 and 62,000 visits in 1990 and 1995, with average "willingness to pay" of about \$3.7 million and \$3.9 million for the same years.

### WILDERNESS STUDY AREAS

The North Fork, Gardner Mountain, and Fortification Creek WSAs were identified by BLM personnel in 1979 and 1980 through the intensive wilderness inventory process, which is described in *Wilderness Inventory Handbook* (USDI, BLM 1978). The inventory narratives for the three WSAs are on file at the Buffalo Resource Area office.

The North Fork and Gardner Mountain WSAs are in the South Big Horns issue area; the Fortification Creek WSA is in the Powder River Breaks issue area.

### Physical and Biological Features

#### Geology

The North Fork and Gardner Mountain WSAs are on the east flank of the Laramide Age, Big Horn mountains uplift adjacent to the Powder River Basin. Eastward dipping sedimentary units in the North Fork WSA range in age from Jurassic to Mississippian. A southeastward trending segment of the Tensleep fault crosses the eastern tip of the WSA. The stratigraphic throw along this fault exceeds 500 feet northwest of the WSA.

Sedimentary units in the Gardner Mountain WSA range in age from Permian to Mississippian. These sediments dip moderately east, southeast, or southwest in response to a south-east plunging syncline that crosses the WSA.

The Fortification Creek WSA lies on the the gently westward-dipping east flank of the Powder River Basin syncline of Laramide age. No major faults or other structures are known in the area, which contains more than 20,000 feet of relatively undisturbed sediments ranging from Paleozoic to Tertiary in age. The Wasatch Formation of Eocene age is the only unit exposed at the surface.

#### Air Quality

The air quality of the WSAs are as described under the "Resource Area Profile."

#### Topography

The North Fork WSA is dominated by four major canyons that dissect the WSA west to east. These are Packsaddle Canyon, Pass Creek, Horseshoe Canyon, and the North Fork of Powder River Canyon. Each canyon is characterized to some degree by steep, often precipitous walls and narrow, winding canyon floors. North Fork Canyon is by far the most spectacular. The rest of the WSA is generally characterized by many small east-west drainages, gentle to moderate slopes, rolling hills, and rock outcrops.

The dominant topographic features in the Gardner Mountain WSA are the canyons formed by the Red Fork of Powder River and Beartrap Creek. The canyons feature sheer walls and moderate to steep slopes. The area between these canyons contains a gently sloping plateau locally called the "V". Fraker Mountain is the dominant feature on the eastern side of the WSA.

The Fortification Creek WSA is characterized by rough broken terrain. The landscape is highly dissected by drainages that form narrow ridges and valleys. This feature is most evident in the Cedar Draw, Snell Canyon, Bull Creek and Deer Creek drainages.



## THE AFFECTED ENVIRONMENT

### Water

The principal streams in the North Fork WSA, the North Fork of Powder River and Pass Creek, are perennial. They are generally clear except during periods of high flow, such as spring runoff, and periods of heavy precipitation.

The principal streams in the Gardner Mountain WSA are the Red Fork of Powder River and Beartrap Creek. Both streams are perennial. They are generally clear except during periods of high flow.

There are no perennial streams in the Fortification Creek WSA.

### Soils

Soils in the North Fork and Gardner Mountain WSAs generally are similar. The soils are in the Sunup-Passcreek Rock Outcrop association. These soils are generally shallow to moderately deep, stony, and moderately fine textured. They are interspersed with rock outcrop on the slopes.

Soils in the Fortification Creek WSA are in the Shingle Rock Outcrop association. The soils are shallow, well drained, and of medium texture. They are interspersed with rock outcrops on ridge crests and hillside slopes. Erosion is a problem on these soils. Parent bedrock is sandstone and shale (see map 8).

### Vegetation

The North Fork and Gardner Mountain WSAs are in the Douglas-fir forest ecosystem, Rocky Mountain Forest Province. Vegetation types in the two WSAs generally are similar. The largest vegetation type consists of a big sagebrush-dominated shrub community with an understory dominated by grasses. The most common grasses in this vegetation type are western wheatgrass, bluebunch wheatgrass and needlegrass. At higher elevations and on deep soil sites, Idaho fescue and bluegrass are the most abundant grasses. On some sites, the big sagebrush may be replaced by or co-dominate with curlleaf mountain mahogany or three-tip sage. The rest of the vegetation in these areas is an open forest-shrub-grassland type. This vegetation

type is characterized by an overstory tree cover composed of ponderosa pine, limber pine, and Douglas-fir. The shrub component is dominated by curlleaf mountain mahogany and big sagebrush, with understory vegetation of bluegrass and Idaho fescue.

The Fortification Creek WSA is representative of the sagebrush steppe ecosystem, Great Plains Short Grass Prairie Province. The most prominent vegetation community is a sagebrush-grassland complex. Big sagebrush is the most common shrub in this vegetation type, but silver sagebrush, snakeweed, and rabbitbrush are abundant on some sites. The understory vegetation is dominated by bluebunch wheatgrass, needle and thread grass, green needlegrass, blue grama, and western wheatgrass. There are small stands of ponderosa pine and juniper on some north- and east-facing slopes (see map 9).

### Wildlife

**Fish** The North Fork WSA contains the North Fork of Powder River, which has been rated a class 2 fishery by the Wyoming Game and Fish Department. (Class 2 fisheries are very good trout waters having statewide importance.) The present population status of the stream on public land is about 2,145 trout per mile. This WSA also contains Pass Creek, which the Wyoming Game and Fish Department has rated a class 3 fishery (important trout waters of regional importance). The major species in these streams are rainbow and brown trout.

The Gardner Mountain WSA contains the Red Fork of Powder River and Beartrap Creek, both of which have been rated as class 3 fisheries by the Wyoming Game and Fish Department. The major species in these streams are rainbow, brown, and brook trout.

There are no fisheries in the Fortification Creek WSA.

**Big Game** The North Fork WSA has an estimated population of 8 mule deer per section. Numbers fluctuate because the deer are mobile; however, it is known that about 250 to 350 mule deer summer in the general North Fork Area.



## THE AFFECTED ENVIRONMENT

The Gardner Mountain WSA provides yearlong range for mule deer and is important deer winter range. It is estimated that 350 to 500 mule deer utilize this area in all seasons except winter, when the numbers may increase to as many as 700.

The Wyoming Game and Fish Department estimates that the Fortification Creek WSA and adjacent lands are used by approximately 400 to 500 mule deer yearlong. The entire WSA is important deer winter/yearlong range.

The entire North Fork WSA area, except for the North Fork and Pass Creek canyons and one section between Pass Creek and Pack Saddle Canyon, is crucial winter-yearlong range for elk. There are approximately 100 to 150 elk that winter in this area and about 100 head that summer in the North Fork area.

The North Fork of the Powder River and the many drainages that enter it provide excellent escape cover and shelter from severe weather.

The Gardner Mountain WSA provides yearlong elk range. About 50 to 100 head of elk winter in this area.

Approximately 50 to 75 elk range in the Fortification Creek WSA. About 75% of the area within this WSA is considered crucial yearlong range for elk. In addition, the WSA provides important elk calving grounds.

The Fortification Creek elk herd is significant in that it is one of the last remaining herds to occupy their original habitat.

Population numbers for mountain lion in the WSAs are not known; however, 10 lions were harvested in 1980 near Gardner Mountain. The Wyoming Game and Fish Department estimates that four to five pairs inhabit this area; therefore, they probably range in this WSA.

Black bear can occasionally be found in the North Fork and Gardner Mountain WSAs.

**Threatened and Endangered Species** The BLM inventoried the North Fork and Gardner Mountain WSAs in 1980 and Fortification Creek in

1981 for threatened and endangered species, but none were found. Bald eagles may occasionally be found during the winter along the major streams in these units, but no roosts, nests, or concentration areas have been documented.

### Cultural Resources

Archeologic sites in the North Fork and Gardner Mountain WSAs are expected in fairly high densities (2 per square mile) on grassy open slopes. These sites will probably be small, open, limited activity areas, often with some primary or secondary quarrying. Canyon settings on lower slopes can be expected to have sharp increases in site densities, to about 5 per square mile. These consist chiefly of larger open camps and rock shelters.

Historic sites in the Gardner Mountain WSA include Fraker Mountain and Fraker Pass, and portions of the Dull Knife Battlefield.

It is anticipated that the site density is 5 per square mile in the Fortification Creek WSA. The sites are probably of medium size, on uplands and hilltops and around coniferous breaks. Sites might include tipi rings, hearths, and chipping stations of various functions.

### Social Attitudes and Lifestyles

During the wilderness inventory and study phases, many individuals voiced their opinions through letters or personal contact. The letters received are available for public review in the Buffalo Resource Area.

In general, local residents, industry and particularly BLM permittees, oppose wilderness designation, regarding it as a method of preventing resource uses, or a "lockup." Ranchers tend to feel that wilderness designation would restrict their ability to manage their operations in such areas as construction and maintenance of water developments and control of noxious weeds. Some expressed concern that long-term decisions would be made by people unfamiliar with the areas, yet local residents would have to live with the results of those decisions.



## THE AFFECTED ENVIRONMENT

Regional and national attitudes toward wilderness designation have been surveyed by various polls. A report detailing the results of some of these studies is available for review in the Buffalo Resource Area office. In general, these surveys indicate that public opinion is about evenly divided between support and opposition for designation of additional wilderness areas. The findings are complicated by the fact that many respondents do not fully understand wilderness management policies.

Some comments from persons who supported more wilderness designation were that more land is needed for primitive recreation, that too much land is being lost to business and industry, and that wildlife needs more space. Comments from those opposed to further designation were that limited access provisions discriminate against older or handicapped persons, that the land could better be used for farming or for a growing population, and that wilderness favors those with ample time to hike into the back country or with money enough to rent horses.

There will be a formal public comment period before a final wilderness EIS is prepared. The response received during the comment period will be detailed in the final wilderness EIS.

### Land Ownership

The North Fork WSA contains 10,089 acres of BLM-administered public land; Gardner Mountain contains 6,423 acres of public land, and Fortification Creek has 12,419 acres of public land. A state-owned section (640 acres) lays within the boundaries of the Fortification Creek WSA. There is no privately owned land within the boundaries of any of the WSAs.

All the WSAs are surrounded by private land. There is no access except by granted permission from landowners.

### Land Use

#### Mineral Development and Production

The eastern edge of the North Fork WSA may have some oil and gas potential. Part of one oil

and gas lease extends into this WSA. No known or suspected deposits of locatable minerals in economic quantities are in the North Fork WSA. There are several prospect sites, but no mining claims were on record in the WSA as of September 30, 1982.

The Gardner Mountain WSA contains no known or suspected deposits of locatable minerals in economic quantities—oil and gas, uranium, or energy and strategic minerals. There are no oil and gas leases in the area, and the potential for oil and gas is low. No mining claims are on record as of September 30, 1982.

The Fortification Creek WSA includes parts of three oil and gas leases, and potential exists for such deposits beneath the entire area. An estimated 50 million tons of strippable coal lie beneath 960 acres of the WSA. Extremely large deposits of coal (several billion tons) lie beneath the entire WSA, although the coal is too deep for strip mining. The potential for the occurrence of strategic minerals in this WSA is extremely low. No exploration for other locatable minerals is known to have occurred, and no mining claims had been filed within the area as of September 30, 1982.

Oil and gas exploration and development are intensive on lands adjacent to the Fortification Creek WSA. The development includes roads, producing wells, and developed sites. It can be assumed that the potential for oil and gas development within the WSA is very high. A plan that addresses oil and gas development in the Fortification Creek WSA has been completed. The plan is directed at mitigating impacts from oil and gas development. Land inside the WSA is included in the plan.

Different types of data are available concerning the geology and associated mineral potential of the WSAs. General factors normally used to assess mineral potential of a given area include: (1) general geology of an area, which may reveal the presence of formations which are known to contain various types of minerals in adjacent areas, (2) presence of source rocks from which petroleum may have migrated or hydrothermal solutions may have concentrated other types of minerals, (3) stratigraphy, which may suggest



## THE AFFECTED ENVIRONMENT

the existence of petroleum or other mineral producing formations under the ground surface, (4) structure, which may indicate the possible presence of fault-bounded petroleum accumulations or shear zones where various types of locatable minerals may be present at or below the surface, (5) stratistruktural features which combine two aspects described above to provide potential areas where mineral deposits could form, (6) mineral leases, mining claims, or mineral extraction permits are present in the area, (7) wells or prospect pits are present, (8) mineral exploration activity is present in the general area, (9) Geological Survey Report exists for the area, (10) a field examination was done on the subject area.

Table 13 indicates the general data base which was used to assess the mineral potential of each WSA. The existence of favorable conditions for the presence of mineral values is indicated by a positive sign (+), unfavorable conditions are indicated by a negative sign (-). A question mark (?) is used to indicate that pertinent data was unavailable. In a general way Table 13 can be used to determine and compare the mineral potential of each WSA and the data on which the conclusions are based.

### Livestock Grazing

Portions of Gardner Mountain and North Fork WSAs are used for livestock grazing during all seasons, but most use occurs during the spring and summer. Range condition is good.

Grazing occurs in parts of the Fortification Creek WSA year-round, with most use in winter and early spring. Range condition is good in this WSA.

The status of grazing on the WSAs is shown in table 14.

Range improvement projects in the North Fork and Gardner Mountain WSAs include fences, small stock-water reservoirs, a water pipeline and tank, and ranch roads. The Fortification Creek WSA contains range improvement projects including fences, small stock-water reservoirs, two stock-water tanks, and ranch roads.

### Timber Harvesting

The forestlands in the Gardner Mountain and North Fork WSAs are primarily decadent saw-timber stands. Stocking density varies from medium to well stocked for the Douglas-fir type to poor to medium stocked for limber and ponderosa pine types. Lodgepole pine types are medium to well stocked; ponderosa pine type is poor to medium stocked. The 810 acres of commercial forestlands in the Gardner Mountain WSA contain approximately 4 mmbf of saw-timber. In the North Fork WSA, 3,028 acres of commercial forestlands contain approximately 18 mmbf of timber. Each of these WSAs contains some evidence of past post and pole cutting. Additionally there are 2,600 acres of non-commercial forestland in the North Fork WSA and 500 acres in the Gardner Mountain WSA.

The Fortification Creek WSA contains no potentially commercial forestland. However, there is approximately 1,000 acres of noncommercial forestland within this WSA.

### Recreation

Recreation in the Gardner Mountain and North Fork WSAs generally is dispersed except in the North Fork canyon, which receives some concentrated use. These WSAs provide a semi-primitive motorized setting for recreation activities. They are characterized by predominantly unmodified natural environment of moderate size. As a result of being surrounded by private land, use levels are low (less than 500 visitor days per year). Often adjacent landowners charge an access fee or in some cases deny access. Current uses include hunting, fishing, horseback riding, camping and sight-seeing.

On-site management restrictions on visitor use have not been initiated by the BLM. No recreation facilities have been provided. Motorized use is permitted although restricted to designated routes.

The Fortification Creek WSA also provides a semiprimitive motorized recreation setting and offers good opportunities for users to experience primitive and unconfined recreation. Current activities include hunting, horseback



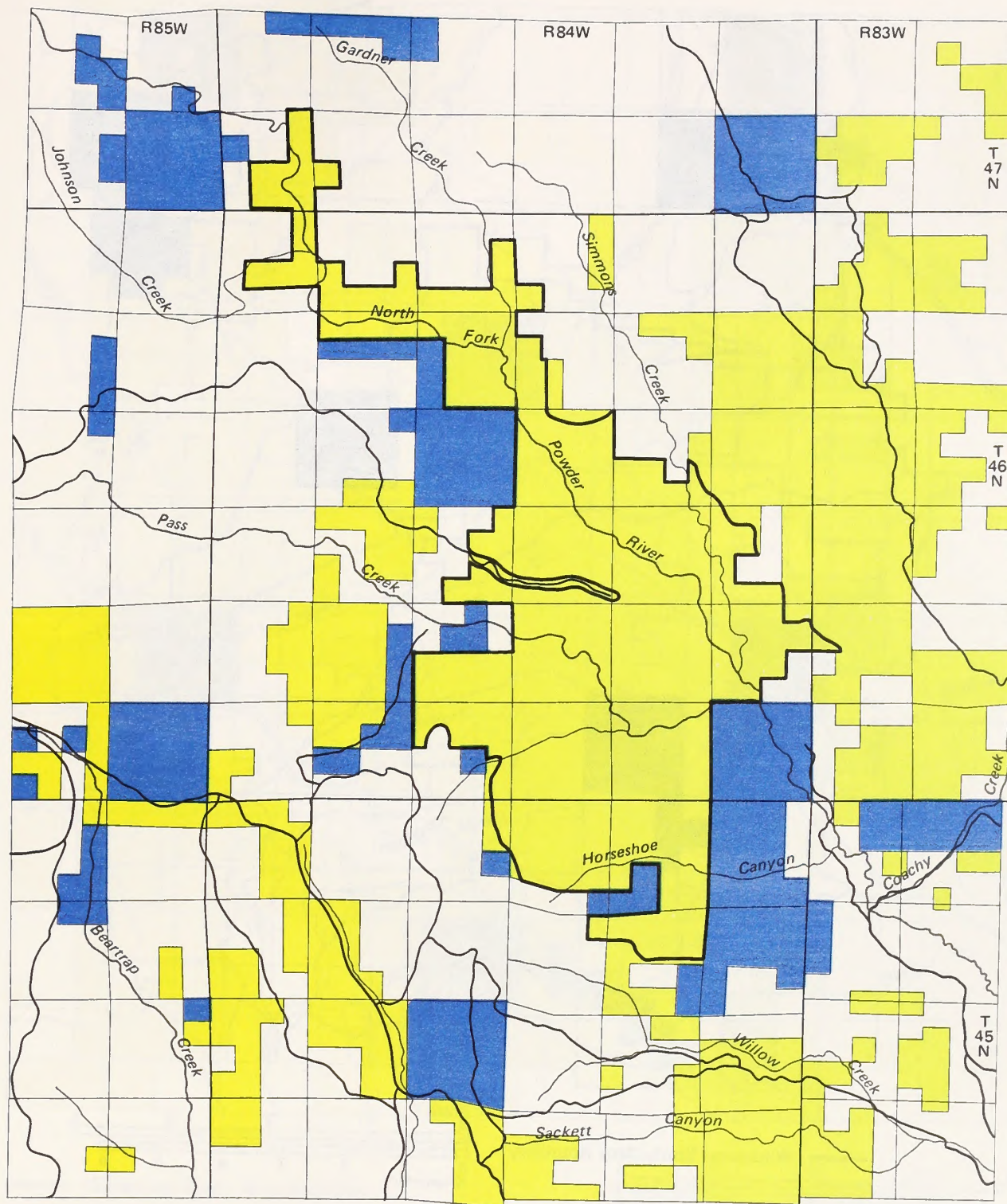
TABLE 13 WSA DATA QUALITY/COMPARISON CHART

NORTH FORK WSA	PETROLEUM	COAL	URANIUM	BENTONITE	GYPSUM	S & G	LIMESTONE
General geology	-	-	-	-	+	+	+
Source rocks	+	-	+	-	+	+	+
Stratigraphy	+	-	-	-	+	?	+
Structure	+	-	?	-	?	?	+
Stratistrucltural	+	-	?	?	?	?	?
Leases/claims	+	-	-	-	-	-	-
Wells/prospects	-	-	?	-	?	?	-
Exploration activity	-	-	-	-	-	-	-
Geol. Survey Report	+	?	?	?	+	?	?
Field examination	?	?	?	?	?	?	?

GARDNER MOUNTAIN WSA	PETROLEUM	COAL	URANIUM	BENTONITE	GYPSUM	S & G	LIMESTONE
General geology	-	-	-	-	-	+	+
Source rocks	+	-	+	-	+	+	+
Stratigraphy	-	-	-	-	-	?	+
Structure	-	-	?	-	?	?	-
Stratistrucltural	-	-	?	?	?	?	?
Leases/claims	-	-	-	-	-	-	-
Wells/prospects	-	-	?	-	?	?	-
Exploration activity	-	-	-	-	-	-	-
Geol. Survey Report	?	?	?	?	?	?	?
Field examination	?	?	?	?	?	?	?

FORTIFICATION GREEK WSA	PETROLEUM	COAL	URANIUM	BENTONITE	GYPSUM	S & G	LIMESTONE
General geology	+	+	-	-	-	-	-
Source rocks	+	+	+	-	-	-	-
Stratigraphy	+	+	-	-	-	-	-
Structure	-	+	?	?	?	?	-
Stratistrucltural	?	?	?	?	?	?	-
Leases/claims	+	-	-	-	-	-	-
Wells/prospects	+	?	-	-	-	-	-
Exploration activity	+	+	-	-	-	-	-
Geol. Survey Report	?	?	?	?	?	?	?
Field examination	?	?	?	?	?	?	?



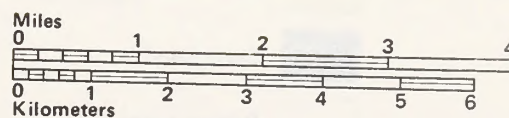


— Wilderness Study Area Boundary

Public Land

State Land

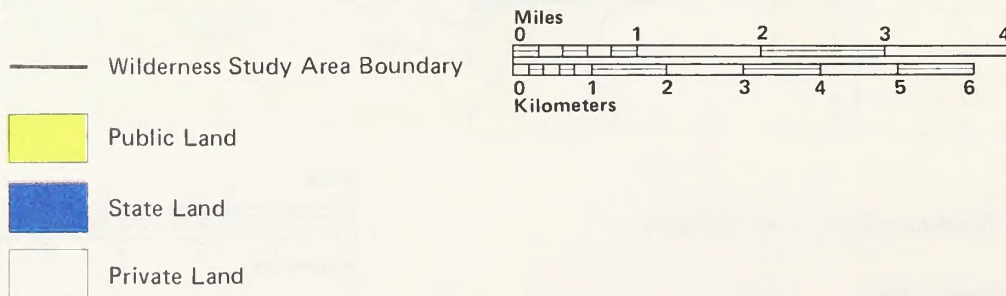
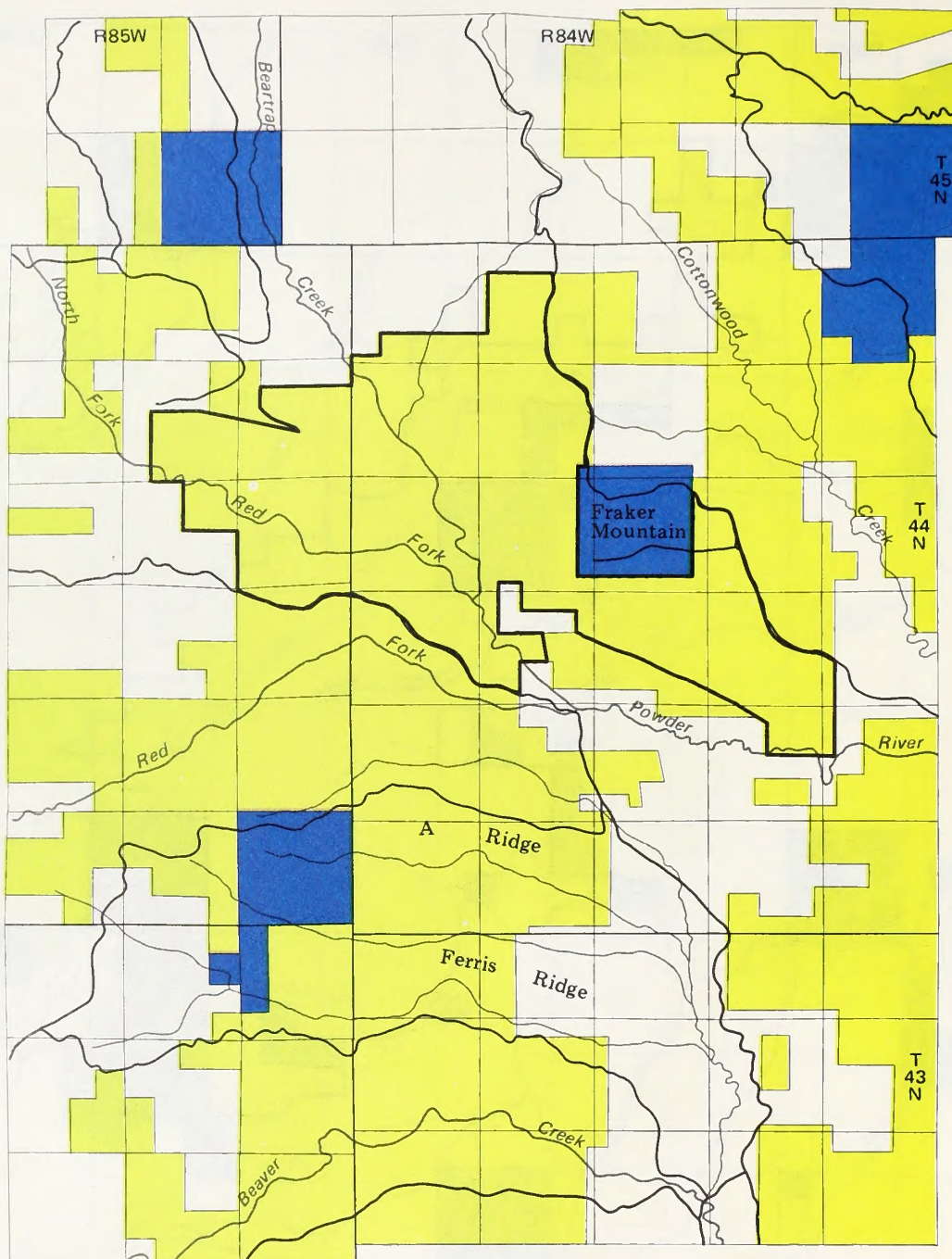
Private Land



Entire WSA is rated as low mineral potential

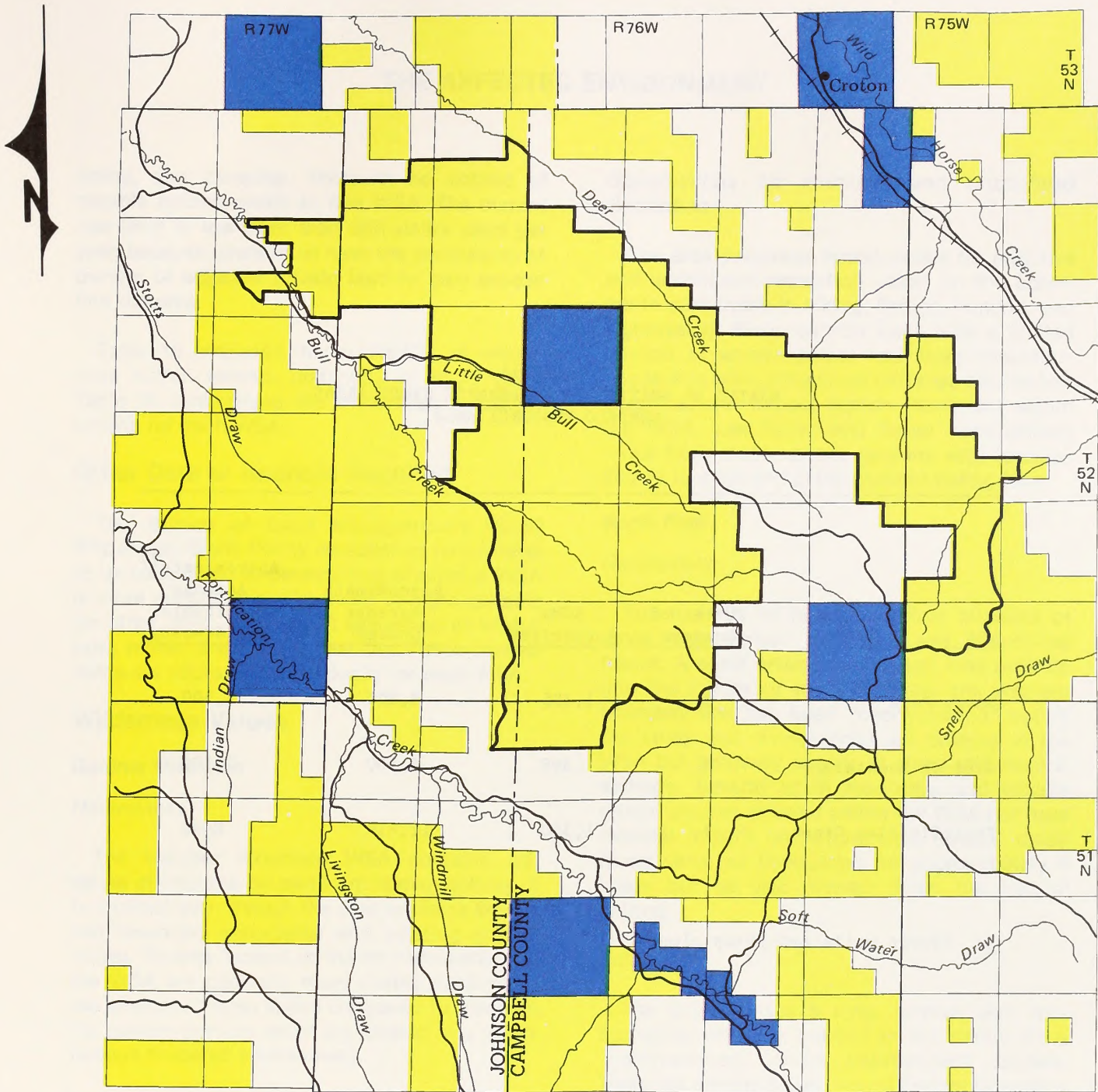
Mineral Potential  
North Fork Powder River





Entire WSA is rated as low mineral potential.





— Wilderness Study Area Boundary

Public Land

State Land

Private Land



Entire WSA is rated as high mineral potential.

### Mineral Potential Fortification Creek



TABLE 14  
STATUS OF GRAZING IN WILDERNESS STUDY AREAS  
BUFFALO RESOURCE AREA

---

<u>WSA</u>	<u>Number of Lessees</u>	<u>AUMs Authorized</u>	<u>Approximate Acreage Grazed</u>	<u>Approximate<sup>1/</sup> Acreage Unsuitable for Grazing</u>
North Fork	3	1,195	8,800	1,300
Gardner Mountain	3	398	5,100	1,200
Fortification Creek	3	1,350	12,419	None

<sup>1/</sup> Canyon walls and steep slopes



## THE AFFECTED ENVIRONMENT

riding, and camping. There is no source of reliable potable water in this WSA. The current use level is low (less than 500 visitor days per year) because users must have the permission of owners of adjacent private land to gain access into the area.

Table 15 indicates the availability of wilderness within various distances of each WSA. Table 16 summarizes the wilderness suitability criteria for each WSA.

### Other Data or Analysis Required

The Bureau of Land Management's (BLM) Wilderness Study Policy establishes two criteria to be considered in determining whether a WSA is more suitable for wilderness or more suitable for other uses. They are; 1) evaluation of wilderness values, and 2) manageability. These components are addresses individually for each WSA.

### Wilderness Values

#### Gardner Mountain

##### *Naturalness*

The Gardner Mountain WSA contains evidence of imprints caused from human activity. It is minimal even though the area contains fences and reservoirs associated with existing grazing leases. Fences located in the western portion of the WSA are generally more visible because of the amount of open space compared to those on the eastern portion which are located in a mountainous timbered environment.

##### *Solitude*

The unit, for the most part, is steep, rugged and natural in character. The inventory determined the WSA offered opportunities for solitude as a result of two major canyons and the large percentage of rugged topography and forested terrain. Low altitude military test flights occur on a regular basis over the western portion of the unit. Although distracting to persons seeking a primitive experience, these flights are of short duration and have minimal impacts on solitude.

##### *Opportunities for Primitive and Unconfined Recreation*

The area possesses opportunities for primitive and unconfined recreation based on the potential to participate in hiking, fishing, hunting, and sightseeing. Steep canyon walls with a limited number of access points and steep mountainous terrain with rocky sheer cliffs are natural barriers that will impact human movement within the WSA. Landforms and biotic communities range from steep narrow canyons with forested slopes to sage and grass covered rolling hills.

#### North Fork

##### *Naturalness*

The majority of human imprints consists of range improvement facilities and associated routes. A stock water pipeline and road extends into the center of the WSA from the western boundary and has been "cherrystemed" out of the study unit. Fence lines are present in the WSA but generally appear to blend into natural settings. Several small reservoirs and vehicle routes are also present within the WSA but have minimal impact on naturalness. Several ranch roads serve as boundaries for approximately 6 miles but do not distract from the natural setting.

##### *Solitude*

The WSA posses a long, narrow, oval configuration which is pierced in the center by a "cherrystemed" range improvement project. There are several small narrow fingers extending from the WSA, mainly in the north and south. AS a result of this land pattern there are moderate impacts on solitude resulting from actions occurring on private lands, particularly in the south and north, and the immediate area around the "cherrystem."

The inventory determined the WSA offered outstanding opportunities for solitude as a result of the many canyons and forested areas found within the are. The southern most section of the WSA would be considered to be poor for providing opportunities for solitude.



TABLE 15  
REGIONAL WILDERNESS DIVERSITY FACTORS

Gardner Mountain WSA					
Factor	Standard Metropolitan Statistical Area		Miles from WSA		
	Acreage within 50 miles	Acreage within 100 miles	Acreage within 150 miles	Acreage within 200 miles	Acreage within 250 miles
Statutory (designated) wilderness	None	None	686,584	3,027,472	3,204,551
Administratively endorsed wilderness	155,544	181,944	200,089	2,707,084	3,341,126
Other wilderness study areas	321,321	463,500	548,480	733,075	1,631,792
Statutory wilderness with ecosystem #M 3110-11 <sup>a</sup>	None	None	137,317	652,474	667,734
Administratively endorsed wilderness with ecosystem #M 3110-11	72,774	82,574	82,574	1,834,135	1,934,704
Other WSAs with ecosystems #M 3110-11	130,394	151,866	152,576	163,414	506,338
North Fork WSA					
Factor	Standard Metropolitan Statistical Area		Miles from WSA		
	Acreage within 50 miles	Acreage within 100 miles	Acreage within 150 miles	Acreage within 200 miles	Acreage within 250 miles
Statutory (designated) wilderness	None	None	686,584	3,027,472	3,204,551
Administratively endorsed wilderness	155,544	181,944	200,089	2,707,084	3,341,126
Other wilderness study areas	321,321	463,500	548,480	733,075	1,631,792
Statutory wilderness with ecosystem #M 3110-11 <sup>a</sup>	None	None	137,317	652,474	667,734
Administratively endorsed wilderness with ecosystem #M 3110-11	72,774	82,574	82,574	1,834,135	1,934,704
Other WSAs with ecosystems #M 3110-11	130,394	151,866	152,576	163,414	506,338
Fortification Creek WSA					
Factor	Standard Metropolitan Statistical Area		Miles from WSA		
	Acreage within 50 miles	Acreage within 100 miles	Acreage within 150 miles	Acreage within 200 miles	Acreage within 250 miles
Statutory (designated) wilderness	None	None	None	None	3,119,126
Administratively endorsed wilderness	None	172,144	199,504	216,500	2,658,663
Other wilderness study areas	12,419	319,595	459,545	607,758	815,941
Statutory wilderness with ecosystem #M 3110-49 <sup>b</sup>	None	None	None	None	None
Administratively endorsed wilderness with ecosystem #M 3110-49	None	None	None	None	None
Other WSAs with ecosystem #M 3110-49	None	None	None	None	None

a. Douglas-fir forest ecosystem, Rocky Mountain Forest Province, based on classification according to Bailey-Kuchler classification method (U.S. Department of Agriculture, Ecosystems of the United States).

b. Sagebrush steppe ecosystem, Great Plains Short Grass Prairie Province, Bailey-Kuchler system.



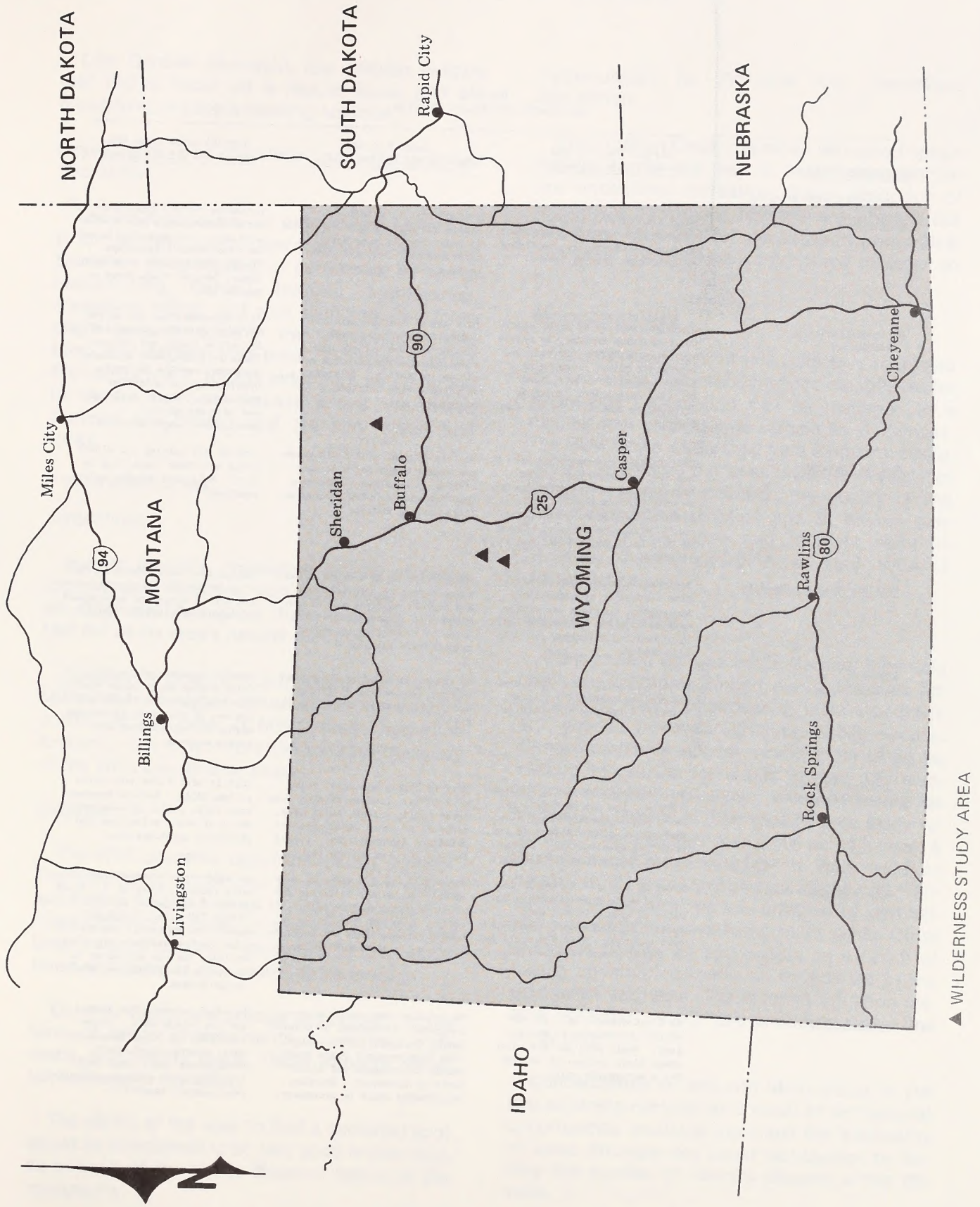




TABLE 16  
WILDERNESS SUITABILITY CRITERIA

WILDERNESS VALUES	Gardner Mountain WSA WY-060-201 (6,423 acres)	North Fork WSA WY-060-202 (10,089 acres)	Fortification Creek WSA WY-060-204 (12,419 acres)
<u>Wilderness Characteristics</u>			
Naturalness	Human influence is minimal although area contains fences and constructed reservoirs associated with existing grazing leases.	Most of unit is pristine. Fences and constructed reservoirs do exist but are substantially unnoticeable. Several ranch roads serve as boundaries.	Extensive fence lines, minor range improvements and vehicle ways exist but generally blend into the natural landscape. Mineral development on adjacent lands. Several roads serve as boundaries.
Solitude/Primitive Recreation	Although hampered by size, opportunities exist because use levels are low. Variety of terrain and vegetative cover, presence of diverse wildlife create broad base for recreation. Solitude affected by low altitude military flights	Unit has diverse terrain and vegetative cover; natural characteristics--offers outstanding opportunities for primitive recreation. Solitude is affected by low altitude military flights.	Fair opportunities are helped by rough terrain intersected by narrow ridges and valleys. These features, with scattered junipers, combine to create opportunity for primitive recreation. Nearby railroad and adjacent mineral development hamper solitude.
<u>Special Features</u>	Unit is yearlong range for elk and deer and important winter range for mule deer. Both rivers in unit have excellent trout fishing. Geological formations can be viewed in canyons. Parts of Dull Knife Battlefield are in this WSA.	Unit is crucial winter elk range and summer range for mule deer. Fishing is excellent. Numerous opportunities to view geological formations in canyons.	Crucial elk calving and winter range have been identified in unit. Mule deer inhabit unit yearlong.
<u>Multiple Resource Benefits</u>	Designation would enhance primitive recreation opportunities and augment multiple use management of adjacent and nearby lands by protecting watershed and wildlife habitat.	Designation would enhance primitive recreation opportunities and augment multiple use of management of adjacent and nearby lands by protecting watershed and wildlife habitat.	Designation would enhance primitive recreation opportunities and aid in long-term maintenance of important wildlife habitat.
Diversity Natural Systems	No ecosystem/landform types that are not represented in greater quantity & quality elsewhere in region.	No ecosystem/landform types that are not represented in greater quantity & quality elsewhere in region.	Area is representative of Great Plains Short Grass Prairie Province/sagebrush steppe ecosystem. No statutory wilderness within 250 mile radius with same ecosystem.
Opportunities Near Population Centers	Unit is within one day's drive of 3 SMSAs. Low use because area lacks public access, small size, presence of other wilderness and primitive opportunities. Demand is high for hunting and fishing.	Unit is within one days' drive of 3 SMSAs. Low use because area lacks public access, small size, presence of other wilderness and primitive opportunities. Demand is high for hunting and fishing.	Unit is within one days drive of two SMSAs. Low use because area lacks public access, presence of other wilderness and primitive opportunities.
Geographic Distribution	Total of 3,027,472 acres of designated wilderness is within 200 miles of unit. Within same radius, 2,707,084 more acres has been endorsed. This WSA would be an insignificant contribution.	Total of 3,027,472 acres of designated wilderness is within 200 miles of unit. Within same radius, 2,707,084 more acres has been endorsed. This WSA would be an insignificant contribution.	No wilderness areas within 200-mile radius. Total of 3,119,126 acres of designated wilderness is within 250 miles; 2,658,663 more acres endorsed. Fortification Creek would be a significant addition because ecosystem is unique in the Wilderness Preservation System.
MANAGEABILITY	No legal access; unit is completely surrounded by private land. Small size and irregular shape limit options to provide for a manageable unit.	No legal access; unit is completely surrounded by private land. Poor ability to control ORVs from boundary roads would result in trespass and disturbance of livestock. Boundary adjustments would be necessary.	No legal access. One state section within unit. Three pre-FLPMA oil & gas leases in unit; mineral development on adjacent land. Poor ability to protect wilderness quality from outside impacts.



## THE AFFECTED ENVIRONMENT

Like Gardner Mountain, low altitude military test flights occur on a regular basis and are distracting to people seeking solitude.

### *Opportunity For Primitive and Unconfirmed Recreation*

The WSA possesses an outstanding opportunity for the user to experience primitive recreation based on the potential to participate in hiking, backpacking, fishing, hunting, sightseeing, horseback riding, and rock climbing. The three major canyons do limit free movement within them and access into them. Movement within the canyons will, for the most part, be restricted to canyon bottoms. Access points into these canyons are limited and are very steep and rocky.

### **Fortification Creek**

#### *Naturalness*

Human imprints, consisting largely of range improvement facilities and associated routes, are dispersed throughout the unit but do not affect the study area's natural features.

However, railroad line and county road can be observed from higher elevations on the eastern portion of the WSA. A high voltage powerline located a few miles from the western boundary of the WSA can also be seen.

#### *Solitude*

The WSA presents opportunities for solitude. The area is characterized by numerous ridges and highly dissected creek drainages. Vegetative cover consists of small clusters of junipers and large concentrations of grass and juniper. Vegetative screening is considered to be average.

Outside sights and sounds are present in the form of range improvements, powerlines, railroads, and county roads. These impacts diminish solitude in the WSA.

The ability of the user to find a secluded spot would be considered to be very good in this WSA as a result of the highly dissected nature of the topography.

### *Opportunities for Primitive And Unconfined Recreation*

Fortification Creek possesses very good opportunities for the user to experience primitive and unconfined recreation. Some restriction of movement by natural barriers are present but will have little impact on those opportunities. The WSA does not have any source of water on it.

### **Manageability**

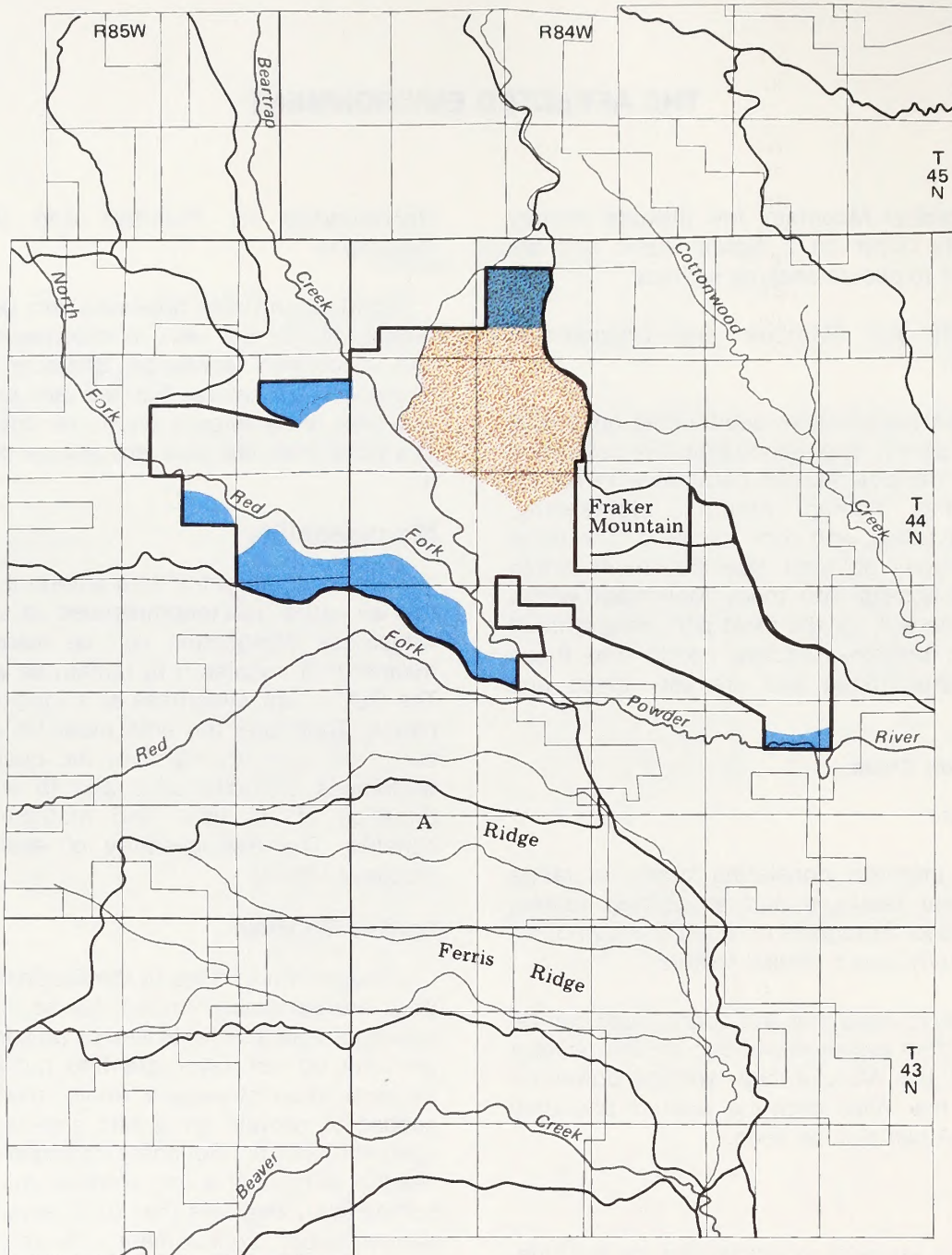
The primary intent of this criteria is to ensure that an entire area recommended as suitable for wilderness designation can be managed in a manner that enables it to remain as wilderness. The BLM views wilderness as a long-term designation. Therefore, the area must be capable of being managed to maintain the quality of the wilderness characteristics and to ensure continuation of its uses and multiple resource benefits. The manageability of each WSA is discussed below.

### **Gardner Mountain**


Management options in the Gardner Mountain WSA are extremely limited due to its size. Access to the area is controlled by private landowners who do not favor granting public access. Condemnation of access would most likely be needed to provide for public access and management control. Boundary changes would be needed to provide a manageable unit, likely resulting in an area less than 5,000 acres in size. A narrow finger, approximately  $\frac{1}{4}$  mile wide, is located in the southeast portion of the unit. This section would be adversely affected by development on adjacent private and state lands. Other adjustments may be appropriate as a result of having constructed roads as boundaries in the southwest and west. The existing situation creates potential vehicle use problems within the study unit.


Concentration of use will likely occur in the two adjoining canyons as a result of recreational opportunities available there and the availability of water. Management could be obtained by limiting the number of visitors allowed within the WSA.



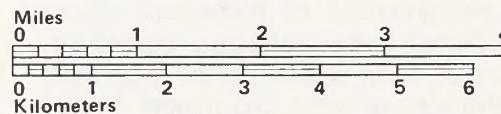


— Wilderness Study Area Boundary

 Manageability

 Conflict Resolution

No Wilderness includes entire WSA Area





## THE AFFECTED ENVIRONMENT

### North Fork

The dominant use of the lands within WSA is for livestock grazing which is compatible with wilderness preservation. The grazing permits will have a small impact as there would likely be impacts stemming from wilderness designation and its users and livestock. The use of motorized vehicles for facility maintenance or project development (if allowed) would have a periodic impact on wilderness values.

The North Fork WSA is considered to have low potential for oil and gas. Presently, there is one oil and gas lease which effects a very small number of acres within the boundaries of the WSA.

The WSA has no public access and the entire area is surrounded by private and state land. Local landowners do not favor public access. Condemnation of access would most likely be needed if the area were to become wilderness.

There is 3,200 acres of state land scattered mostly on the east and west border of the WSA. Any large scale development of adjoining state land could impact manageability and wilderness values to a substantial degree because of the relatively small size and configuration of the WSA.

Adjustments to the WSA boundary for manageability would be appropriate in several cases because of the irregular and narrow shape of the WSA. These adjustments are described under Alternative 5 in Chapter 2.

Increased numbers of visitors would be expected in the North Fork and Pass Creek Canyons because of the recreational opportunities and the beauty of the natural features found in the canyons. This concentration of use would cause moderate impacts on opportunities for solitude. Manageability in this situation may only be obtained by limiting the number of visitors within the WSA at any one time.

A cherry stem road extends into the western portion of the WSA for approximately 2 miles. Moderate to strong impacts can be anticipated from vehicle use on this road. If designated this road would be closed to all vehicle traffic except

the permittee who controls the stock watering pipeline. If vehicle use is controlled, the only impact of this road and project would be to the natural setting of the area and considered minimal.

### Fortification Creek

Management options in the WSA are dependent on mineral development. The unit has good potential for oil and gas within its boundaries. Pre-FLPMA leases exist within the WSA and others are located adjacent to the unit boundaries. There is significant amounts of recoverable coal deposits within the WSA. Exploration and development would cause major problems for preserving the wilderness characteristics of the area.

Access into the unit is controlled by private landowners who have voiced their objections to granting public access. Condemnation of access would most likely be needed to provide for public access and management controls.

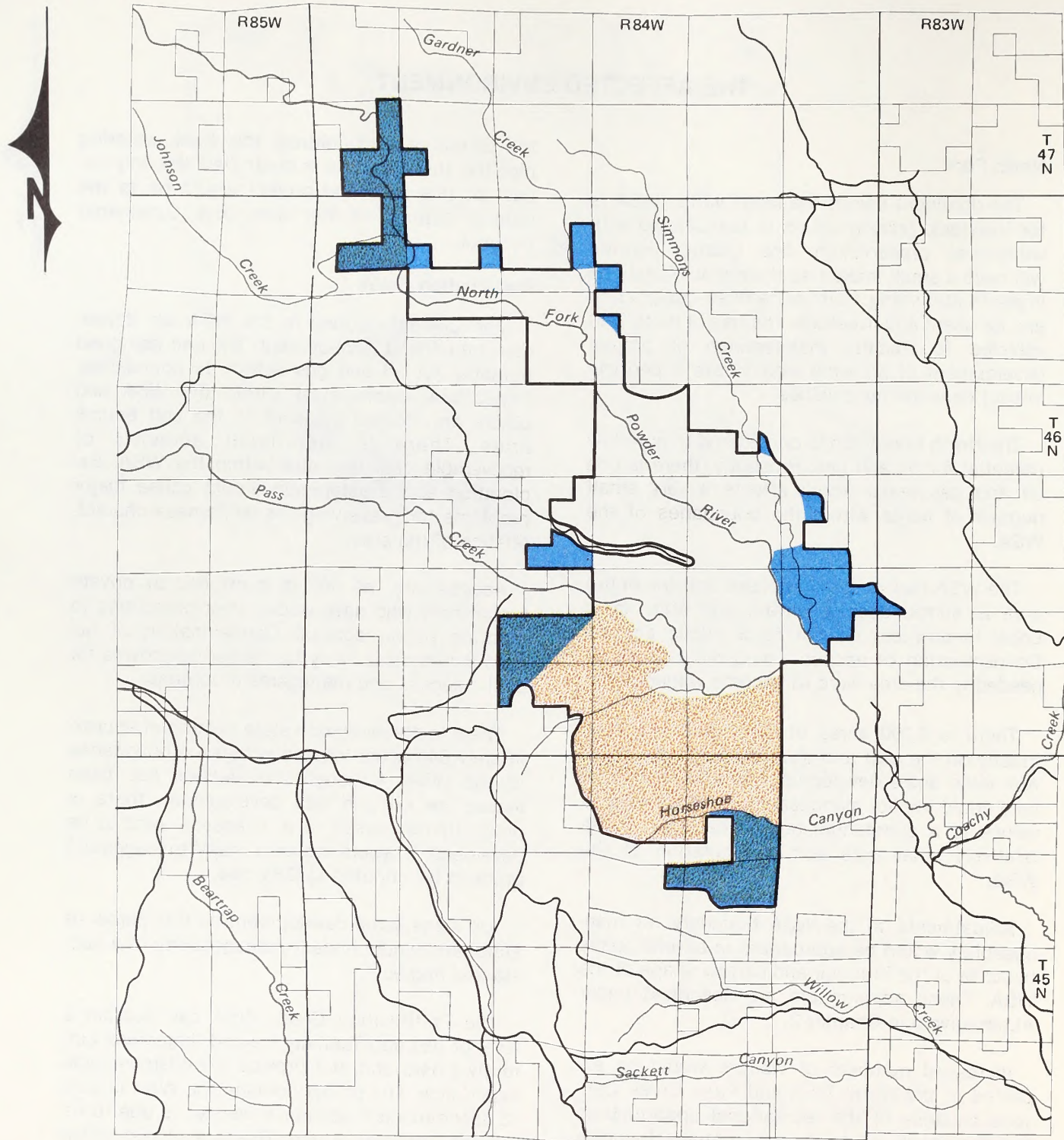
There is presently one state section of approximately 640 acres located within the boundaries of the WSA. Although this section has been leased for oil and gas development, there is presently no access to it. If access were to be developed, it would create a major management problem for controlling ORV use.




Any large scale development on this parcel of state land would impact manageability to a substantial degree.

The Fortification Creek WSA can sustain a level of use substantially beyond that which currently exists and still provide a wilderness-type experience. The primary reason the WSA is able to accommodate additional visitors is due to its current low level of use. The lack of distinctive features and the screening available within the area also contribute to its ability to accommodate increased numbers of users.

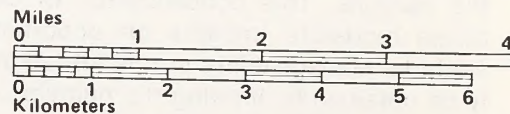
It is assumed that use would not increase to the point where special management would be required to prevent the degradation of wilderness characteristics. Maintenance of the area as it currently exists would provide for the maximum enhancement of the wilderness characteristics.



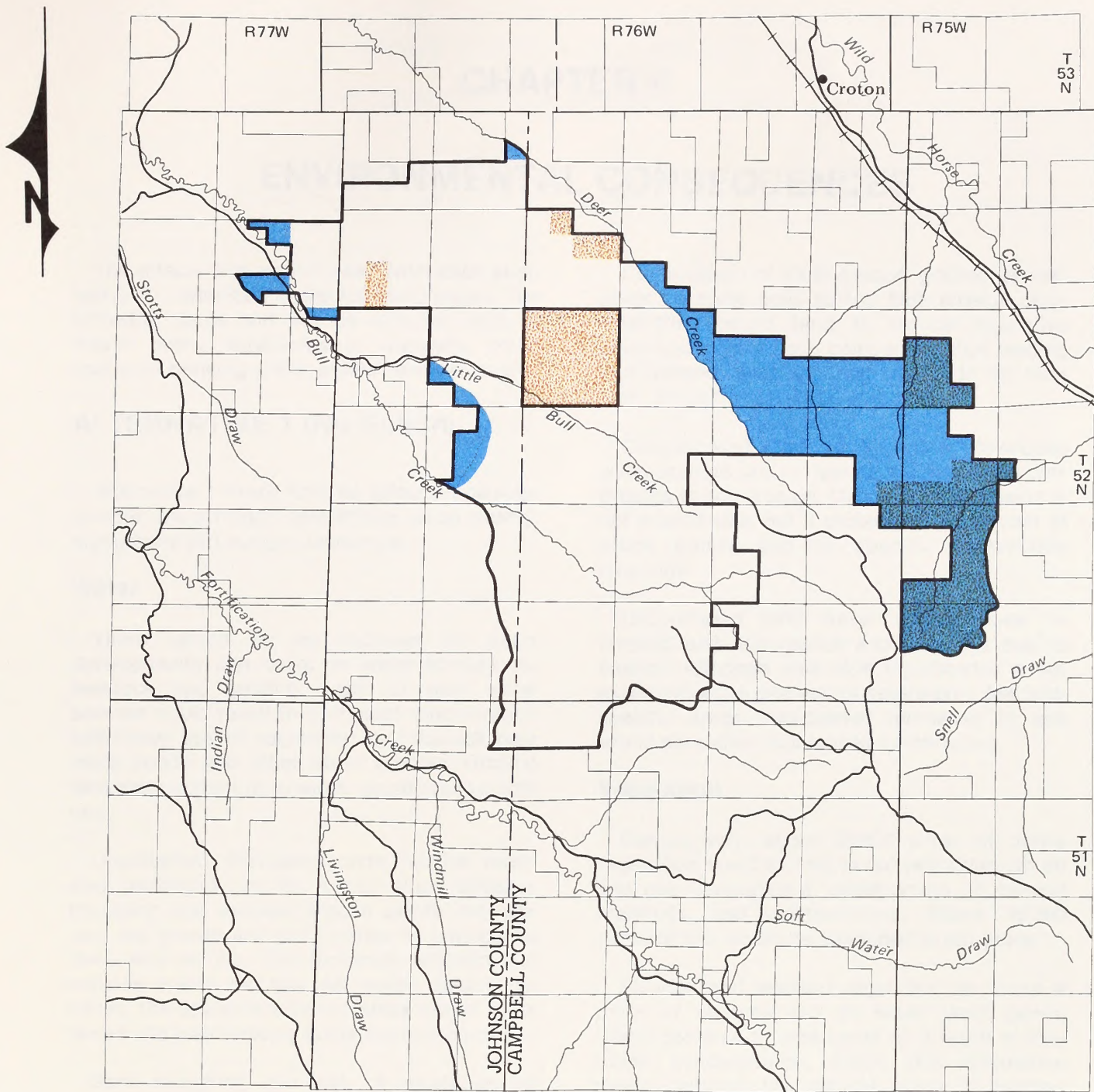


-  Wilderness Study Area Boundary
-  Manageability
-  Conflict Resolution

No Wilderness includes entire WSA Area







— Wilderness Study Area Boundary

Manageability

Conflict Resolution

No Wilderness includes entire WSA Area









## CHAPTER 4

# ENVIRONMENTAL CONSEQUENCES

The effects that would result from each alternative are described in the following pages. The following items will not be affected: wild or scenic rivers, floodplains or wetlands, prime source of drinking water, public health or safety.

### ALTERNATIVE 1 (No Action)

Alternative 1 would have no effect on geology, climate, and no significant effects on air quality, topography and cultural resources.

#### Water

There would be no increase in water developments that serve as water sources for livestock and wildlife. Lack of new water sources would result in continued concentration and heavy use of vegetation by livestock near stock ponds and other water sources. Grazing land more distant from water would receive light use.

Unprotected livestock ponds receive intensive, prolonged use. As is true along streams, trampling and overuse around ponds can prevent the growth and proliferation of emergents, trees, and shrubs. This increases siltation and reduces water storage. As water quality declines, the usefulness of the stock ponds is reduced and maintenance costs are increased.

Bank sloughing and lack of vegetation on about 4 miles (map 6) of streamside would continue to introduce non-point source silt loads into streams. The cumulative effect that would occur on downstream water quality and stream habitat is not known.

#### Soils

Cumulatively, about 26,000 acres would be disturbed and about 16,000 acres reclaimed in ten years as a result of various land uses authorized by the BLM which include oil and gas sites, right-of-ways and mineral material sites. Soil loss through various erosive forces is usually minimal.

Continuation of early season grazing by livestock on some soils having high erosion characteristics would tend to reduce vegetative cover and increase soil compaction thus leading to increased runoff and soil erosion in the long term. Amounts cannot be quantified.

Concentrated livestock use near developed water sources and in riparian wetland areas contributes to soil erosion. The amount of erosion is not quantifiable, but it probably is significant at stock ponds and at specific streamside locations.

Uncontrolled ORV travel would cause increased soil disturbance and soil loss due to erosion. Although area wide significance is not measurable the problem is severe on a few site-specific areas. Anticipated increases of use would accelerate soil losses in the future.

#### Vegetation

Cumulatively, about 26,000 acres of native vegetation would be lost in ten years through oil and gas development, development of mineral materials, and rights-of-ways. About 16,000 acres of this would be reclaimed in ten years.

Riparian and wetland vegetation on about 4 miles of streams and on small stock ponds would continue to deteriorate as a result of livestock concentration. Since this alternative would continue the present policy of fencing stock ponds only if they have 5 acres of surface acres or more, there would be no opportunity to establish riparian or wetland vegetation on smaller reservoirs. Protection of streamside vegetation would continue to be a problem.

No vegetation manipulation would occur. Vegetative sites suitable for treatments and soils that are responsive to grazing treatments would produce far below their potential.

The current grazing management would be maintained. Few or no revisions would be made to correct problems. The long-term result would be no improvement or a decline in range condi-



## ENVIRONMENTAL CONSEQUENCES

tion in the South Big Horns and Powder River Breaks.

### Wildlife

Cumulatively, there would be no increase in riparian habitat under this alternative, and little or no benefit would accrue to wildlife.

Crucial elk range on about 10,000 acres in the South Big Horns and on about 6,000 acres in the Powder River Breaks would remain in less than good condition. The remaining land in crucial elk range is in good range condition. Conflict between livestock and big game would remain and would increase in the long term.

The effect that loss of wildlife habitat would have on wildlife populations is difficult to quantify. Although 26,000 acres of habitat would be disturbed over the ten-year period, 60% of the disturbed land to be reclaimed in that time would become available to wildlife again. Disturbance of habitat would displace wildlife, especially big game animals, onto adjacent lands, increasing competition in the short term and a probable increase in mortality. The continued loss of wildlife habitat from a variety of land uses and developments on public and private lands would have serious long-term effects on present wildlife populations. Total annual disturbance on the public land is a small amount when weighed against the total numbers of acres disturbed annually in the resource area.

Concentrated livestock use in riparian areas along streams and reservoirs lowers the quality and in some cases eliminates feed and cover for wildlife. Lack of protection around stock ponds smaller than 5 acres significantly reduces and might eliminate the associated riparian and wetland vegetation systems on these smaller reservoirs.

In streams in poor condition, habitat quality has been reduced by siltation and turbidity from erosion in the watersheds and from stream banks.

Much of the erosion from the watershed is natural but various land uses do lend to the problem. Problem areas are usually site-specific, such as riparian zones.

Silt deposits cover spawning gravels, eliminating trout reproduction. Aquatic invertebrates, which serve as fish food, also are reduced by siltation.

### Economics

It is estimated that continuing present range management practices (retaining existing numbers of AUMs and maintaining range projects) would return about \$1.24 to the public for each dollar invested. This return is in terms of AUMs saved that might otherwise be lost if present management levels were not maintained. Range condition would deteriorate in many of the "I" allotments and the amount and quality of forage would decrease.

Population, employment, and income would not be affected through any proposal in this alternative.

Sale of public land to the private sector would contribute some revenues to county tax bases. The total amount would not be significant, about 4 to 10 cents per acre, assuming most of the land sold is Class 3 and 4 rangelands. Revenue paid directly to the counties by the federal government (in lieu of taxes) is 75 cents per acre. Those revenues would terminate on any acreage sold.

The additional monetary cost involved with surface developments on the public land would continue. These costs are attributable to various measures to mitigate impacts. Cumulatively, the cost to a user would be low and the benefits high in terms of reducing, and in most cases eliminating, long-term impacts.

### Social Attitudes and Lifestyles

Sale of the 5,000 acres of public land in Campbell County would create concern for various users of that public land. Sale is not a new program and has been used beneficially in the past. Present BLM policy and regulations require that BLM consider environmental, social, and economic values and consequences before selling lands. Sales would be beneficial in terms of enhancing management on the public lands. Since the future intensity of the public land



## ENVIRONMENTAL CONSEQUENCES

sales program is unknown, we cannot predict the amount of public land that actually would be sold in the next ten years.

Difficulties in getting needed range improvements in the past have been very frustrating for operators. Continued absence of improvements could be interpreted as a loss of opportunity to improve ranch operations.

### Land Ownership

Sale of public land would entail changes in surface ownership. Selling isolated, difficult to manage, tracts of public land would help to consolidate complex land ownership patterns. Current planning decisions prohibit selling isolated tracts over high moderate coal. The decision eliminates any opportunity to effectively consolidate surface ownership in Campbell County.

About 5,000 acres of the public land in Campbell County could have potential for sale. The land would be available in Sheridan and Johnson Counties. These opportunities to consolidate surface ownership would be lost in these counties.

### Land Use

Land uses that require surface disturbance would continue to be restricted or prohibited in certain locations or seasons. Approximate acreages are:

No surface occupancy	47,000 acres
Seasonal occupancy restrictions	48,000 acres
Potential occupancy restrictions	276,000 acres
(e.g. 25% slope, high erosion area)	

These restrictions are beneficial in respect to maintaining, protecting, and preserving a variety of the public's resources while allowing the use of those resources to provide goods and services to the public. The cumulative effect of these restrictions is not quantifiable.

About 200 acres are disturbed annually through actions authorized by various permits, grants, and uses on public lands. Disturbance is

usually of short duration, and the surface is reclaimed immediately afterward.

### Mineral Development and Production

An additional 2,600 acres would be closed to mining location under the Mining Law of 1872. About 6,000 acres would be closed to oil and gas leasing. About 780,000 acres containing about 68 billion tons of high to moderate development potential federal coal would be available for further leasing consideration throughout the resource area.

### Livestock Grazing

Cumulatively, about 57% of the public rangeland, (about 220,000 acres) would remain in less than good condition. The range condition would not be expected to decline, nor would it improve in the short term. In the long term, range condition would decline.

Resource condition on 43% (161,000 acres) in the area would remain in good condition. Resource condition on 415,000 acres would remain in satisfactory condition ("M" and "C" category allotments).

Poor livestock distribution resulting from a lack of water availability would continue in some areas. This would contribute to improperly utilized range and lower stocking rates on 220,000 acres of public land.

### Timber Harvesting

Wood products on noncommercial forestland would not be available for use under this alternative because of current restrictions; thus, the opportunity to meet increasing demands for posts, poles, and firewood would be limited.

### Recreation

Public access to important recreation areas and cooperative agreements scheduled for the next ten years would help to ease the demand for recreation on the public lands.

Cumulatively, it is expected that recreation demand would double in some areas especially in the South Big Horns (BLM projections, Buffalo Resource Area). All public land in Sheridan



## ENVIRONMENTAL CONSEQUENCES

and Campbell Counties would remain open to ORV use.

### Fire Management

The exclusion of fire to manipulate vegetation is prescribed except in the Middle Fork. Opportunities to increase livestock forage and improve wildlife habitat are not available.

### Wilderness

There would be no change in the WSAs. These areas would continue to be managed under their interim management plans.

## ALTERNATIVE 2 (Balanced Resource Use and No Wilderness)

Alternative 2 would have no effect on geology and climate, and no significant effect on air quality, topography and cultural resources. Effects would be the same as that described for Alternative 1 except for:

### Water

Existing water sources would be maintained. In the next ten years, about 7 new stock ponds, 15 wells, 5 springs, 3 catchments, and 21 miles of water pipeline would be constructed. This document describes only the improvements projected for ten years; however, the BLM would continue to construct water developments after that time under this alternative.

All water developments, regardless of size, would be protected by fencing where beneficial. Fencing would prevent livestock trampling, which would result in an increase in cover and plant vigor and a significant decrease in sedimentation. Water quality and storage would be improved. Water development on crucial wintering areas, particularly those for elk and antelope, deplete winter forage through concentrations of livestock during summer and fall.

Stream banks and channels would become more resistant to erosion. Bank sloughing and

stream siltation would be corrected on 3 miles of streams in the South Big Horns and 1 miles of streams in the Powder River Breaks. Fencing, management of livestock, and pool development or other stream bank stabilization methods would be developed and initiated. These measures would cause significant decrease in siltation at these non-point sources. Stream and riparian habitat at these sources would be reestablished and it is estimated that stream banks would be stabilized in 10 to 15 years. There would be no change in 3 to 5 years, because monitoring and the initial implementation of grazing systems would take that long. Downstream water quality is expected to improve over the long term by reducing silt loads. The amount of reduction cannot be quantified.

### Soil

Soil disturbance would be minimal and would increase by about 50 acres per year during construction of range improvement projects. Cumulatively, about 500 acres would be disturbed above the 26,000 acres mentioned in Alternative 1. Reclamation figures would be about the same as those given under Alternative 1, except that a small amount of land surface would be under water where new stock ponds were established. Fencing of developed watering sources would help to stabilize soils adjacent to reservoirs, thus reducing erosion.

Implementing various grazing systems would help to stabilize soil and increase fertility and productivity in the long term. Areas that are particularly susceptible to erosion may not stabilize if increased grazing use occurs in the spring. ORV designations in Campbell and Sheridan counties would tend to reduce erosion through decreased surface disturbance.

### Vegetation

Loss of native vegetation under this alternative would amount to about 50 acres more per year than under Alternative 1. The native vegetation lost during construction of stock ponds and catchments would not be available during the life of those projects, which is estimated to be 25 to 35 years with proper maintenance. Protective measures such as fencing of water sources



## ENVIRONMENTAL CONSEQUENCES

would increase riparian-wetland vegetation.

Improved management, placement of range improvements, and supervision of use would result in improvement in riparian and wetland areas. Reduced use would cause an increase in plant cover, plant community structure, and plant health.

About 1,400 acres of sagebrush would be converted to grassland in ten years. Fifty acres of aspen would be treated. Fire would be the primary conversion tool. An increase in forage production ranging from 50% to 70% (professional judgement) would be expected on these lands.

### Wildlife

Water development would enhance riparian habitat for most wildlife species, especially during the summer.

Fish habitat would improve in the South Big Horns through management actions to improve streambank and channel habitat. Deferred and/or rest grazing systems would allow grass and forbs as well as woody plants to reestablish and stabilize streambanks. Consequently siltation and stream widening will decrease and cover and forage conditions for fish would improve.

Reservoir construction would improve habitat conditions for wildlife at each site as soon as rest or deferred treatments or fencing are implemented. Benefits would be long term.

A few of the proposed new reservoirs may be built to support game fish where sites are suitable. Fencing would be required to reduce sedimentation and improve aquatic and riparian vegetation.

Big game habitat is expected to improve on "I" allotments over the long term.

Specific wildlife habitat conditions have not been classified in most of the resource area, thus monitoring of AMPs would be designed to evaluate condition, trend and utilization of wildlife habitats. From the results of monitoring, adjustments in allocations of vegetation or grazing systems, or additions of rangeland im-

provements (water source development, fencing) would be incorporated to maintain or improve crucial habitats or specific habitat needs.

Intensive rangeland management practices might cause changes in plant communities and the wildlife using them. As ecological condition changed in response to vegetation manipulation on specific areas, some species would be displaced. Grazing systems involving deferred use or resting of certain pastures would help to improve the quantity and quality of wildlife habitat and provide areas where wildlife did not have to compete with livestock.

Problems for wildlife could occur on pastures in which livestock grazing was allowed from April through June because this is one of the most crucial times for many wildlife species—birth, rearing of newborn, and lactation occur during this time. Animals recovering from winter stress also would be affected by competition with livestock during early spring.

Range improvement projects would affect antelope habitat. Eradication of sagebrush would make areas less suitable habitat for antelope, especially during winter. Maintaining the sagebrush in crucial antelope habitat would eliminate any long-term effect.

Conflicts could occur between antelope and domestic sheep where they would have to compete for shrubby winter forage and spring forbs. Short-term declines in antelope use would be probable.

Rested or deferred pastures would decrease displacement and competition with livestock and increase nutrient intakes for antelope.

Deferment of pasture use by livestock in the spring, or resting pastures, would increase nesting success for all upland game birds. Survival of young birds also would be increased.

There would be little change in elk habitat in "M" and "C" category allotments, but some changes would occur in the long term on "I" category allotments, where long-term changes could be expected to produce more grass and



## ENVIRONMENTAL CONSEQUENCES

forbs, improving elk foraging areas. It is expected that practices under this alternative would improve the condition of 16,000 acres of critical elk range from less than good to good condition.

As a result of non designation of wilderness in Fortification Creek WSA, the expected oil and gas development would cause a moderate to strong impact on wildlife in the area may occur. No effects are anticipated in the Gardner Mountain and North Fork WSAs, in the short term.

### Economics

It is estimated that implementing rangeland management practices, including new range improvements, would return \$1.25 to the public for each dollar invested. An additional benefit would be an estimated minimum increase of 6,000 AUMs above the maintainance level.

In the long term, increased livestock production would be expected on all "I" category allotments.

Some grazing lessees would lose their grazing preference if certain tracts of the public lands are sold. Significance of impact to a lessee is dependent on how much land is sold and the eventual owner. If the lessee is the successful bidder, there would be no impact.

Sale of public land to the private sector would contribute some revenues to county tax bases. The total amount would not be significant, about 4 to 10 cents per acre, assuming most of the land sold is Class 3 and 4 rangelands. Revenue paid directly to the counties by the federal government (in lieu of taxes) is 75 cents per acre. Those revenues would terminate on any acreage sold.

### Social Attitudes and Lifestyles

Because this alternative would raise the level of range improvements and management intensity, it would agree with the perception of local ranchers that the range condition needs to be improved.

The majority of public land comments were

against wilderness designation; thus, this alternative responds to those concerns. Comments from conservation groups and public outside the area favored wilderness designation.

### Land Ownership

Removal of restrictions on disposals of small, isolated tracts of public surface over high and moderate potential coal would result in the addition of about 90,000 more acres to the land that might be potentially available for disposal. The total of potentially available public surface would be about 95,000 acres in Campbell County. The probability of all of this being sold is very low. Tracts that meet the sale criteria in Johnson and Sheridan counties would also be considered for sale. Estimates indicate that about 90,000 acres could potentially be available for sale in these two counties. The total figure for land that may be available for potential disposal in the resource area would be about 185,000 acres.

### Land Use

#### Mineral Development and Production

The Gardner Mountain and North Fork WSAs would be open to mineral exploration and development. As a result of the low mineral potential in the two WSAs it is believed that this would have a low impact.

In Fortification Creek WSA mineral exploration and development would be expected to increase dramatically because of known coal resources and a high oil and gas potential.

#### Livestock Grazing

Range condition would be expected to improve most rapidly on allotments under intensive grazing management systems. The rate of improvement would be somewhat slower where only the season and numbers of livestock were managed.

Intensive management systems provide for replenishment of plant carbohydrate reserves, seed production, seedling establishment, and scattering and trampling of seed. In addition, range improvements and grazing treatments associated with this type of management pro-



## ENVIRONMENTAL CONSEQUENCES

vide for proper forage utilization and for even distribution of grazing.

The rate at which vegetation responds to changes in grazing also is affected by the initial condition of the range on the sites involved and by natural factors such as soil, climate, and topography. Generally, range condition would improve more rapidly on productive range sites and on areas that were initially in fair to good condition. Somewhat slower response to management would be expected on poor condition ranges or on areas dominated by low-production range sites.

Proper grazing levels would increase livestock production through increased AUM availability. AUMs would increase from about 94,000 to 100,000 in 15 to 25 years.

Stress due to moving livestock would increase slightly on the areas covered by an AMP. The result would be reduced production. Reliable spring forage and cover for young calves would be provided in rest systems. Livestock breeding success might be improved by fencing and closer stock confinement. Changes in non-management plan allotments ("M" and "C" categories) would be minor and have little impact on livestock.

It is estimated that forage production could be increased about 18% to 22% and range condition would improve to a good condition class on 16 "I" allotments in 15 to 25 years. This would be an increase of about 1,600 AUMs in forage production.

### Timber Harvesting

Commercial timber on 3,028 acres in the North Fork WSA and 810 acres in the Gardner Mountain WSA would be available for harvesting. Any large scale commercial timber harvesting would impair the wilderness values in these WSAs due to road construction and the visual effect of the cut area.

The utilization of wood products from non-commercial forestlands could help to meet some of the local demand for posts, poles, and firewood.

Noncommercial forestlands also provide important wildlife use areas. Fuelwood cutting would temporarily displace mule deer and elk to adjacent areas. Mule deer and elk foraging areas could be improved by opening up dense stands of trees previously showing minimal big game use. Small game and non game habitat would be improved by cutting small areas for edge effect.

Commercial forest sales could occur under this no wilderness alternative. Previously unharvested timber stands in Gardner Mountain and the North Fork WSAs would be available for timber harvesting with similar wildlife impacts and benefits described above.

### Recreation

ORV designation in Sheridan and Campbell counties would help protect public lands from indiscriminate vehicle use. Most recreationists tend to observe the ORV regulations if they are aware of them. Any decrease in indiscriminate ORV use is a net benefit to surface resources.

### Fire Management

Prescribed burning would improve spring, summer, and fall ranges for deer, but not winter range. Changes in ecological condition toward climax vegetation would benefit deer as long as diversity was maintained and vigorous sagebrush communities continued to support wintering populations. However, if ecological conditions advanced to a grassland monotype, mule deer would decrease. Considering that 1,400 acres would be treated in ten years, no long-term effect on deer would be expected.

Prescribed burning generally benefits elk on all seasonal ranges. Pastures being rested from livestock use would benefit elk habitat by eliminating social competition with livestock, as well as competition for forage and space.

Prescribed burning to reduce sagebrush would reduce sage grouse habitat and populations, especially if winter habitat areas were burned.

Burns that increased succulent plants would improve habitat for the blue grouse and ruffed



## ENVIRONMENTAL CONSEQUENCES

grouse. Habitat for sharp-tailed grouse and Hungarian partridge would improve as ecosystems approached a grassland monotype.

Plant treatments, where used, would affect local wildlife populations, especially small mammals, reptiles, and birds with small home ranges. Wildlife species inhabiting an area might change as vegetative species and composition changed.

### Wilderness

There would be no addition to the National Wilderness Preservation System.

The three WSAs would be recommended as unsuitable for wilderness designation. Resources in these three areas would be available for development and use. The irretrievable loss of existing wilderness values could occur, depending on the type and intensity of the land use. The North Fork and Gardner Mountain WSAs would retain their wilderness character for at least 10 years, more likely for 10 to 20 years, but wilderness values could eventually be lost. Timber cutting might occur in these areas toward the 10 year life of this plan and probably within 15 years.

It is likely that wilderness values in the Fortification Creek WSA would be lost within ten years. Intensive energy mineral development is occurring on lands adjacent to this WSA, and similar activity probably would occur within the WSA within two years after a decision by Congress of nondesignation.

Wildlife habitat may decline in the Fortification Creek WSA because of the good potential for oil, gas and coal production. Development would take place in accordance with the Fortification Creek Oil and Gas plan.

### ALTERNATIVE 3 (Emphasizes Livestock Forage and No Wilderness)

Alternative 3 would have no effect on geology and climate, and no significant effect on air

quality, topography and cultural resources. Alternative 3 would have the same effect as Alternative 2 except:

### Wildlife

The effect of Alternative 3 on wildlife would be the same as that of Alternative 2 except for:

Range management systems that favor management for livestock in crucial elk habitat areas (45,000 acres) would have a long term effect on elk that would result in decreasing numbers.

Development of livestock facilities would increase forage utilization by livestock on crucial elk winter ranges. This would cause a long term effect of reducing the amount of forage available to wintering elk and subsequently an increase in winter die-off of elk. (Refer to range improvements in table 2.)

Riparian and woody draw habitats would decline from increased livestock use. Declines in the habitat would have a long-term effect on many wildlife species other than elk. These include deer, upland game birds and many small game and non game animals.

### Economics

The effect of Alternative 3 on economics would be the same as that described for Alternative 2 except that additional livestock benefits and increased livestock production would be realized in "I" allotments in crucial elk ranges.

### Social Attitudes and Lifestyles

The effects of Alternative 3 on social attitudes and lifestyles would be the same as those of Alternative 1. This alternative might be more acceptable to livestock operators in crucial elk ranges while opposition by conservation groups could be expected.



## ENVIRONMENTAL CONSEQUENCES

### ALTERNATIVE 4 (Emphasizes Wildlife and Watershed Protection and No Wilderness)

Alternative 4 would have no effect on geology and climate, and no significant effect on air quality, topography, and cultural resources. All effects would be the same as those described in Alternative 2 except:

#### Water

Deferral of grazing on areas with high erosion hazard (about 90,000 acres) during spring runoff would mean there would be less livestock trampling; hence, less soil compaction and more vegetative cover. The resulting reduction in erosion is expected to reduce siltation and improve water quality.

#### Soils

Livestock grazing would be deferred annually on areas identified as having severe erosion hazard in the South Big Horns and the Powder River Breaks. This deferment would be during spring and early summer. The increased vegetative cover that would result would help stabilize soils and reduce erosion.

#### Vegetation

Vegetation growth would not be utilized for livestock grazing in the spring and early summer on about 90,000 acres classed as having severe erosion hazard. Vegetation on areas where grazing was deferred would improve in vigor, density, and production because of rest during critical plant growth stages. Cool season grasses and forbs would generally respond quickly to this management. Vegetation that favor elk in crucial habitat areas would develop over the long term.

#### Wildlife

Range condition would be improved on about 45,000 acres of crucial elk habitat in the South Big Horns and the Powder River Breaks. In the long term, crucial elk habitat would be expected

to improve from less than good condition to good. Elk numbers would increase slightly in the long term.

The deferment of livestock grazing (about 11,000 AUMs) in spring and early summer on about 90,000 acres in areas of severe erosion hazard would eliminate competition between livestock and wildlife for forage during that period. This would directly benefit wildlife by reducing competition.

#### Economics

It is estimated that implementing the provisions of this alternative would return about \$1.25 for each dollar invested. There is no decrease in benefits from a dollar value in reducing livestock numbers on crucial elk range and areas of severe erosion hazard.

The loss of 11,000 AUMs of forage during spring and early summer could have a long-term effect on some ranch operations that fall into the severe erosion class areas. Likewise, eliminating 5,600 AUMs of authorized livestock use in crucial elk range would have detrimental economic short-term and long-term consequences for livestock operators in those areas.

#### Livestock Grazing

The effects on livestock grazing would be the same as those of Alternative 2 except that any changes necessary to improve rangeland on 45,000 acres of crucial elk habitat would be made in favor of elk.

Grazing would be deferred in spring and early summer on about 90,000 acres with high erosion potential. This would mean that 11,000 AUMs of forage would not be utilized in March, April, May, and June in areas with high erosion hazard.

The change in livestock use that would be necessary cannot be quantified until monitoring studies are completed.

Livestock production also would be affected by the loss of use of some plants that are available or palatable only in the spring or at other



## ENVIRONMENTAL CONSEQUENCES

seasons. Livestock gains would be reduced, since these areas would not be available during periods when forage is green or when protein content is highest.

### ALTERNATIVE 5 (Balanced Resource Use and Partial Wilderness in the North Fork)

Alternative 5 would have no effect on geology or climate and no significant effects on air quality and topography. All effects under this alternative would be the same as those discussed in Alternative 2 except for:

#### Water

Wilderness designation, if approved by Congress, might result in a concentration of recreation use in the North Fork Canyon, which could decrease water quality. Appropriate management actions could be taken to reduce the impact.

#### Vegetation

Wilderness designation, if approved by Congress, would protect native vegetation in 7,632 acres of the North Fork WSA because such designation would limit or exclude timber cutting, land treatment, surface disturbance, and introduction of nonnative plants.

#### Wildlife

Wilderness designation of a portion of the North Fork WSA, if approved by Congress, would aid in protecting crucial big game habitat in that area. Harvest of deer and elk would decrease because vehicle access would be restricted; therefore, the size of local deer and elk herds would increase.

#### Cultural Resources

Wilderness designation would result in an overall beneficial effect on protection of cultural resources, as it would, by restricting access, effectively eliminate or greatly reduce motor vehicle/machinery-related surface impacts. This in-

cludes ORV recreational use-related vandalism and "pot-hunting" of sites, which is generally more destructive to cultural resources than that which occurs by vandals without vehicles (which are logistically important to organized pot-hunting activities).

#### Economics

Current data does not permit a meaningful comparison of the economic value of motorized recreation versus non-motorized recreation, and it is not possible to predict which type of recreation would incur greater usage, given equal circumstances (access, public knowledge, etc.). Therefore, it is not possible to quantify the economic value of the trade off resulting from the wilderness designation of 7,632 acres of the North Fork WSA. Estimates of costs that would result from wilderness designation follow.

Management plan (one time cost)	\$15,000 - \$30,000
Management cost (annual)	5,000 - 11,000
Maintenance cost (annual)	5,000 - 10,000
Trail development (one item cost)	3,000 - 7,000

Public access would have to be acquired into the North Fork WSA. Estimates will vary depending on how access is obtained.

Cost of access	\$ 1,900 - \$ 2,900
Personnel cost in obtaining access	2,500 - 30,000

An unquantifiable amount of access fees would be lost to adjacent private landowners who charge such fees for access and hunting into the area.

Economic concerns, especially in the livestock industry, are major issues with the local population. They associate problems such as a loss of AUMs, forced changes in management procedures, or reduced sales and loan values of borderline property with wilderness designation.



## ENVIRONMENTAL CONSEQUENCES

### Social Attitudes and Lifestyles

As noted in the discussion of Alternative 1, the majority of local residents are opposed to wilderness designation.

Lifestyles of the adjacent landowners might change as a result of wilderness use. The amount of change would depend on the amount of increase in use by visitors.

### Land Ownership

In the event of designation as wilderness of the area recommended by this alternative, land ownerships into the North Fork WSA might change if access was negotiated through exchange or acquisition. The change would not be significant.

### Land Use

#### Mineral Development and Production

After December 31, 1983, no leases or mining claims would be authorized or filed in the 7,632 acres this alternative would recommend for wilderness designation.

#### Livestock Grazing

Grazing in the North Fork WSA would be managed according to the BLM's wilderness management policy if Congress did designate the recommended area as wilderness. The use of vehicles for grazing operations would be restricted to permitted use if the area was designated wilderness. Use of the wilderness area by visitors might interfere with livestock operations.

#### Timber Harvesting

If the area recommended by the alternative was designated wilderness, about 15 mmbf of commercial timber would not be available for harvest.

#### Recreation

If this alternative was selected and the recommended area was designated wilderness, the opportunity for primitive recreation would be enhanced. Acquisition of access would increase

recreational use of the North Fork WSA from 500 visitor days per year to an estimated 5,000 to 10,000 visitor days. Increased use would create conflicts between landowners and recreationists.

Wilderness designation, if approved by Congress, would eliminate the use of motorized vehicles within the 7,632 acres recommended for designation.

### Wilderness

If Congress designated the area recommended by this alternative as wilderness, the designation would preserve wilderness values in a part of the North Fork WSA. These values include a variety of physical, biological, and scenic resources. Designation would also add 7,632 acres to the National Wilderness Preservation System.

## ALTERNATIVE 6 (Balanced Resource Use and Three Wilderness Areas)

Alternative 6 would have no effect on geology and climate, and no significant effect on air quality and topography. The effects on cultural resources are the same as Alternative 5. All other effects would be the same as those described in Alternative 2 except:

### Water

Wilderness designation of North Fork WSA would concentrate recreation use in North Fork Canyon. Such an increase in use would result in poorer water quality. A similar effect could be expected in the Red Fork of the Powder River and Beartrap Creek in the Gardner Mountain WSA. The effect would be insignificant.

### Soils

Wilderness designation, if enacted by Congress, would provide greater protection of the fragile soils in Fortification Creek WSA because the present uses of the area would be better controlled and future surface disturbance would be curtailed.



## ENVIRONMENTAL CONSEQUENCES

### Vegetation

If Congress designated the WSAs as wilderness, timber cutting, mechanical land treatment, and other surface disturbance would be limited or excluded. Generally, this would protect existing vegetation. In addition, wilderness designation would mean that introduction of nonnative plants would not be allowed in any of the designated wilderness areas.

### Wildlife

If Congress should accept the recommendation of this alternative to designate the three WSAs as wilderness there would be an increase in confrontations between people and wildlife. Big game would be displaced away from established access routes and camping areas.

### Economics

Current data does not permit a meaningful comparison of the economic value of motorized recreation versus non-motorized recreation, and it is not possible to predict which type of recreation would incur greater usage, given equal circumstances (access, public knowledge, etc.). Therefore, it is not possible to quantify the economic value of the trade off resulting from the wilderness designation of 28,931 acres in the three WSAs. The cost for each area of designating wilderness would be similar to the costs estimated under Alternative 5.

### Social Attitudes and Lifestyles

If Congress accepted the recommendation of this alternative to designate the three WSAs as wilderness, local opposition to designation would increase. If designation resulted in heavy use of the wilderness areas, this could cause changes in the lifestyles of owners of land adjacent to the wilderness areas.

### Land Ownership

If designation did occur, the change in land ownership would not be significant; however, access would be acquired into all wilderness areas.

If the Fortification Creek WSA was designated wilderness, one section (640 acres) of state land would be isolated within that WSA. If the state should want access to that section at some future time, the BLM would grant access.

The State of Wyoming has proposed that if this area is designated wilderness that it would favor a land exchange on this section for other federal surface.

### Land Use

No land use that would compromise wilderness values would be allowed in any of the WSAs unless there was a valid existing (pre-1976) right.

### Mineral Development and Production

There are three pre-1976 oil and gas leases in the Fortification Creek WSA. The holders of these leases have valid existing rights to develop them; thus, development at the expense of wilderness values could not be stopped even if that WSA was designated wilderness.

There are no mining claims in any of the three WSAs. Claims could not be filed and leases authorized after December 31, 1983, under this alternative. This provision would exclude development on 28,931 acres after December 31, 1983 (Wilderness Act of 1964).

The section of state land inside the Fortification Creek WSA is leased for oil and gas and for coal. Development of that section would compromise wilderness values in that WSA.

If the three WSAs were designated wilderness as recommended by this alternative, about 50 million tons of high to moderate coal would not be available for development in the Fortification Creek WSA. This is very insignificant when compared to the 68 billion tons now available for leasing.

The oil and gas potential is high in the Fortification Creek WSA. If wilderness designation occurred, this resource would not be developed except on the three pre-1976 leases.



## ENVIRONMENTAL CONSEQUENCES

### Livestock Grazing

The overall effect on grazing would be minimal in terms of change. Increased visitor use could have a moderate effect.

### Timber Harvesting

If Congress accepted the recommendation of this alternative to designate the three WSAs as wilderness, about 22 million board feet of commercial timber would not be available for harvest. Approximately 18 MMBF in the North Fork WSA and 4 MMBF in the Gardner Mountain WSA. This is about 18% of the sawtimber volume in the Buffalo Resource Area.

### Recreation

If Congress designated all three WSAs as wilderness, visitor use would increase from about 500 visitor days per WSA to about 20,000 visitor days for all WSAs. The increase would be attributed primarily to the access and not necessarily the designation.

### Wilderness

The amount of land added to the National Wilderness Preservation System would be 28,931 acres and one new ecosystem not presently represented in the wilderness system (Fortification Creek).







# PREPARERS

## **Outdoor Recreation Planner**

Bob Abbey

Qualifications: B.S. Resource Management University of Southern Mississippi. 3 years BLM, 2 years Army Corps of Engineers, 5 years Mississippi State Park System

Responsibility: Wilderness

## **Realty Specialist**

Jerry Crockford

Qualifications: Undergraduate work/Biology Black Hills State College, Sheridan Community College, 6 years BLM 15 years Industry, South Dakota Forest Products

Responsibilities: Soil, Air, Water

## **Range Conservationist**

Bruce Daughton

Qualifications: B.S. Farm Management Iowa State University, B.S. Range Management Montana State University 20 years BLM

Responsibilities: Range Management

## **Outdoor Recreation Planner**

Mike Giorgis

Qualifications: B.A. Recreation, California State University, Chico 4 years BLM, 5 years U.S. Forest Service

Responsibilities: Recreation/Wilderness

## **Wildlife Biologist**

Larry Gerard

Qualifications: B.S. Wildlife Management University of Wyoming 7 years BLM

Responsibilities: Wildlife Management

## **Range Conservationist**

Steve Hannan

Qualifications: M.S. Range Management Colorado State University, B.S. Wildlife Management, Texas Tech., 7 years BLM

Responsibilities: Range Management

## **District Fire Management Officer**

James A. Johnson

Qualifications: B.S. Outdoor Recreation Colorado State University, 4 years BLM, 9 years National Park Service

Responsibilities: Fire Management

## **Realty Specialist**

John Kolnik

Qualifications: B.S. Range Management University of Wyoming, 9 years BLM, 1 year State of Wyoming

Responsibilities: Lands



## PREPARERS

### Area Manager

Forest Littrell

Qualifications: B.S. Range Management New Mexico State University, 20 years BLM

Responsibilities: Buffalo Resource Area Management Direction. Currently Area Manager, Farmington, New Mexico

### Economist

Larry Marks

Qualifications: MS. Agricultural Economics, Colorado State University, B.S. Farm and Ranch Management, Colorado State University, 3 years BLM, 1 year Farmer's Home, U.S.D.A, 4 years Foreign Agricultural Service, U.S.D.A.

Responsibilities: Economics/Sociologist, Infrastructure

### Environmental Coordinator

Glen Nebeker

Qualifications: M.S. Botany, Brigham Young University, B.S. Botany, Weber State College, 3 years BLM, 1 year Brigham Young University

Responsibilities: Planning

### Forester

Neil Schiche

Qualifications: Post-bachelors Forest Economics and Finance, University of Montana, B.S. Wildlife Biology, Colorado State University, 3 years BLM, 2 yers U.S. Forest Service, 1 year State University North Dakota Forestry Inventory Specialist, 1 year Illinois Forest Preserve District

Responsibilities: Forest Management

### Geologist

Wayne Sutherland

Qualifications: M.A. Geomorphology, University of Wyoming, B.A. Geology, University of Wyoming, 4 years BLM, 1 year Industry, Mine Geologist

Responsibilities: Minerals

### Planning Coordinator

Don Whyde

Qualifications: B.S. Forest Service Resource Management, University of Montana, 13 years BLM, 6 years U.S. Forest Service

Responsibilities: Planning

### Natural Resource Specialist

Runore Wycoff

Qualifications: M.S. Resource Planning, University of Maryland, B.S. Parks and Recreation Administration, Michigan, 1 year BLM, 3 years Heritage Conservation and Recreation Service

Responsibilities: Public Involvement



## REFERENCES

In addition to the works cited below, a number of publications that were consulted are listed in the "Source Documents" section of chapter 2, with abbreviations used in referring to them in the text.

Clark, Tim W. 1977 "Black-Footed Ferrets and Prairie Dogs in Wyoming: Five-Year (1973-77) Summary of Research." Pocatello, ID.

Harbridge House, Inc. 1977 "Social-Economic Profile of the Casper District." 2 vols. Boston

A social and cultural analysis of the Casper District and associated resource areas. Prepared under contract to the Casper District, Bureau of Land Management, U.S. Department of the Interior.

Jameson, John H. 1977 "Archeological Investigation of Sites in the Area of the Proposed Middle Fork Dam and Reservoir: Johnson County, Wyoming". M.S. thesis, University of Wyoming, Laramie.

McCoy, O.M. 1979 Personal communication with McCoy, of the U.S. Geological Survey, regarding water requirements for oil and gas activities. Cited in U.S., Department of the Interior, Bureau of Land Management, Programmatic Environmental Assessment for Oil and Gas Leasing in the Platte River Resource Area, p. 66. EA no. WY-062-1-13. Casper, Wyoming

Reher, Charles A. 1979 The Western Powder River Basin Survey: Report of Survey Results. Vol. 1. Laramie, WY: Office of the State Archeologist.

U.S. Department of Agriculture. Animal and Plant Health Inspection Service and U.S. Department of the Interior. Bureau of Land Management

1980 Rangeland Grasshopper Cooperative Management Program: Final Environmental Impact Statement. Washington.

Prepared by Plant Protection and Quarantine Programs, Animal and Plant Health Inspection Service.

U.S. Department of Agriculture. Soil Conservation Service 1975 Soil Survey of Johnson County, Wyoming: Southern Part.

Prepared in cooperation with the University of Wyoming Agricultural Experiment Station. These detailed soils descriptions and maps can be used for site-specific planning.

U.S. Department of the Interior. Bureau of Land Management 1977 "Buffalo Resource Area Unit Resource Analysis."

On file at the Buffalo Resource Area office, Bureau of Land Management, Buffalo, WY.

1956 Land Planning and Classification Report of the Public Domain Lands in the Powder River Basin and Tongue River Basin - MT and WY. Denver, CO

1978 Wilderness Inventory Handbook: Policy, Direction Procedures, and Guidance for Conducting Wilderness Inventory on the Public Lands. Washington: Government Printing Office.

1979 Final Environmental Statement: Proposed Development of Coal Resources in Eastern Powder River, Wyoming. Washington.

1980 Visual Resources Management Program. Stock no. 024-011-00116-6. Washington: Government Printing Office.

An introduction to the VRM program. Broad and general, it is intended to familiarize decision makers, land use planners, and designers with VRM and its benefits.

1981 Final Powder River Regional Coal Environmental Impact Statement. Casper, WY.

1982 Final Environmental Impact Statement: Grass Creek Grazing Management Program. Worland, WY.

U.S. Department of the Interior, Geological Survey 1980 Water Resource Data for Wyoming: Water Year 1979. Cheyenne, WY. Vol. 1: Missouri River Basin.



## REFERENCES

University of Wyoming 1977 Wyoming General Soil Map. Research Journal 117. Laramie, WY: University of Wyoming, Agricultural Experiment Station.

Wyoming. Game and Fish Department 1982 "Annual Big Game Herd Unit Reports, 1981: District III." N.p.



# **COORDINATION, CONSISTENCY, AND PUBLIC PARTICIPATION**

## **COORDINATION PRIOR TO RMP/EIS PREPARATION**

The Buffalo Resource Area is involved in public participation on an ongoing basis. Planning actions incorporating public involvement in the past several years include a resource area wide Oil and Gas Assessment (1980), coal planning amendments in 1979, 1980, and 1982, and in the inventory phase of the wilderness review program in 1979-80. All these early efforts were widely advertised in an attempt to inform and involve interested and affected publics.

The public involvement processes have included workshops, hearings, personal letters and phone calls, and numerous small group meetings. These efforts were aimed at identifying significant problems and issues to be addressed through the planning process.

Small groups and one on one meetings continued up to and into the present planning process.

## **CONSULTATION AND COORDINATION DURING PREPARATION OF THE RMP/EIS**

With the previous public involvement efforts as a foundation, the Buffalo Resource Area continued its consultation and coordination efforts. A Federal Register notice, a news release and legal notices in four Wyoming newspapers were published announcing the initiation of the RMP and EIS and inviting comment and soliciting suggestions and input on issues to be discussed and analyzed.

In addition, during the RMP/EIS scoping process over 500 letters were sent to a wide variety of agencies, organizations, interest groups, and in-

dividuals. The letters were mailed in the spring of 1982 and were intended to solicit comments, suggestions and opinions concerning issues to be discussed and analyzed in the RMP and EIS.

Approximately 70 small groups or one on one meetings were held with local officials, lessees, landowners, businesses, organizations, and interest groups.

The input received as a result of these public involvement efforts was used in the development of issues, planning criteria and alternatives presented in this document. Individual follow-up letters were sent to many of those requesting more information on the process.

## **CONSISTENCY WITH OTHER PLANS**

Meetings were held with the county planner or county commissioners in the three counties in the Buffalo Resource Area. All indicated there were no conflicts with the county plans.

Meetings were held with personnel from the Bighorn National Forest to discuss wilderness and assure that planning efforts were coordinated. The Soil Conservation Service and the Wyoming Game and Fish Department were also consulted through the process of meetings and formally invited to comment by letter. Consultations with the Fish and Wildlife Service and the Environmental Protection Agency as well as other federal and state agencies was accomplished through correspondence.

Two sessions with the District Grazing Advisory Board were also held during the initial planning efforts. The board was invited to comment and provide input on the planning process, and the range issue in particular.



## COORDINATION, CONSISTENCY, AND PUBLIC PARTICIPATION

### ONGOING PUBLIC PARTICIPATION

The public will have a continuing opportunity to participate in the RMP/EIS process, including the wilderness study aspects. A public open house, public meeting and formal hearing on wilderness will be held. Written comments are requested from those reviewing this document. Oral and written comments will be accepted at the public hearing. All comments will be recorded and incorporated, when applicable, into the final RMP/EIS.

A complete record of public involvement activities, correspondence and comment on the RMP/EIS is on file and located in the Buffalo Resource Area office.

### DISTRIBUTION LIST FOR DRAFT EIS

#### FEDERAL AGENCIES

Department of Agriculture  
Agricultural Stabilization & Conservation Service  
Forest Service  
Soil Conservation Service  
Department of Energy  
Department of the Interior  
Bureau of Mines  
Bureau of Reclamation  
Fish and Wildlife Service  
Geological Survey  
Minerals Management Service  
Office of Surface Mining  
Environmental Protection Agency  
U.S. Air Force

#### FEDERAL ELECTED OFFICIALS

Senator Alan Simpson  
Senator Malcolm Wallop  
Representative Dick Cheney

#### STATE AGENCIES AND ORGANIZATIONS

Montana State Clearinghouse  
State of Wyoming Conservation Commission  
Department of Agriculture  
Department of Environmental Quality  
Economic Planning and Development  
Energy Conservation Office  
Game and Fish Department  
Geological Survey  
Highway Commission  
Industrial Siting Administration  
Land Use Commission  
Oil & Gas Conservation Commission  
Public Service Commission  
Recreation Commission

State Clearinghouse  
State Historic Preservation Offices  
State Planning Coordinator  
State Land Office  
Water Development Commission

#### STATE ELECTED OFFICIALS

Wyoming Governor's Office  
Senators

Rex O. Arney  
Donald Cundall  
Tom Kinnison  
Catherine M. Parks-Gaddis  
Charles K. Scott  
L. V. "Neal" Stafford  
Tom Stroock

Representatives

Bob J. Burnett  
William A. "Rory" Cross  
Lynn Dickey  
Tom Getter  
LaVerna "Pinkie" Hendricks  
Della Herbst  
Kelly F. Mader  
Peter K. Simpson  
Dick Wallis

#### LOCAL GOVERNMENT AGENCIES AND ORGANIZATIONS

Mayor, Town of Buffalo  
Mayor, Town of Casper  
Mayor, Town of Clearmont  
Mayor, Town of Dayton  
Mayor, Town of Gillette  
Mayor, Town of Kaycee  
Mayor, Town of Ranchester  
Mayor, Town of Sheridan  
Buffalo-Johnson County Planning Office  
Campbell County Agricultural Agent  
Campbell County Commissioners  
Campbell County Library  
Campbell County Planner  
Converse County Commissioner  
Converse County Library  
Gillette Planning and Development  
Gillette Planning Director  
Johnson County Agriculture Agent  
Johnson County Commissioners  
Johnson County Library  
Laramie County Library  
Natrona County Commissioners  
Natrona County Library  
Natrona County Planning Commission  
Sheridan County Agricultural Agent  
Sheridan County Commissioners  
Sheridan County Library  
Sheridan County Planning Office  
Wyoming Association of Municipalities



## COORDINATION, CONSISTENCY, AND PUBLIC PARTICIPATION

### BUSINESS/INDUSTRY

Amoco Production Company  
Antelope Coal Company  
Atlantic Richfield Company  
Buckingham Lumber  
Champlin Drilling Company  
Cherokee Exploration, Inc.  
Chevron, U.S.A.  
Conoco, Inc.  
Consolidation Coal  
Decker Coal Company  
Delta Aerial Survey  
Dome Petroleum Company  
Enercor, Inc.  
Exxon Coal U.S.A. Inc.  
Hatcher Petro-Land Company  
Hepkat Earthmovers Inc.  
Idaho Power Company  
Kee Exploration, Inc.  
Kerr McGee Exploration, Inc.  
Kiewit Mining and Engineering Company  
Marathon Oil Company  
Meridian Land and Mining  
Missouri Basin Power Project Company  
Mobil Coal Producing Inc.  
Morrison-Knudsen Company  
Noranda Exploration  
North American Coal Company  
Pacific Power & Light Company  
Petroleum Association of Wyoming  
Ritz Sporting Goods  
Rocky Mountain Oil & Gas Association  
Shell Oil Company  
Sheridan Enterprises, Inc.  
Sheridan Forest Products  
Sohio Petroleum  
Sohio Royal Land Company  
Sunoco Energy Development Company  
Texaco, U.S.A.  
Texas Eastern Transmission Corporation  
True Oil Company  
Union Oil of California  
United States Steel Corporation  
Utah International Inc.  
WESCO Resources, Inc.  
Western Energy Company  
Western Nuclear Inc.  
Wyoming Timber Industry Association  
Wyoming Sawmills

### ENVIRONMENTAL/OUTDOORS

American Wilderness Alliance  
Audubon Society  
Casper Hilltoppers Snowmobile Club  
Casper Snowmobile Club  
Citizens for Orderly Energy Development  
Ducks Unlimited  
Friends of the Earth  
Izaak Walton League  
National Wildlife Federation  
Natural Resources Defense Council

Northern Plains Resource Council  
Outdoors Unlimited  
Powder River Basin Resource Council  
Sheridan County Sportsmen's Association  
Sheridan County Sportsmen's Club  
Sierra Club  
Tongue River Resources  
Trout Unlimited  
Wilderness Society  
Wyoming Environmental Council  
Wyoming Outdoor Coordinating Council  
Wyoming Resource Users Coalition  
Wyoming State Snowmobile Association  
Wyoming Wildlife Federation

### RANCHING/STOCKGROWING

Bishop Land and Livestock Company  
Bow and Arrow Ranch Company  
Clear Creek Grazing  
Dry Creek Ranch, Inc.  
Eaton Bros. Inc.  
Etchemendy Ranch  
Gordon Ranch  
Harlan Ranch  
Johnson County Cattleman's Association  
Johnson County Woolgrowers  
Kendrick Cattle Company  
Koch Ranch  
Morton Bros. Inc.  
Meadowlark Farms, Inc.  
Mooney Ranch  
Mountain Glen Ranch Inc.  
Peters Grazing Association  
Powder River Conservation District  
Rafter L. Ranch Corporation  
Seven Up Ranches Inc.  
Society for Range Management  
State Extension Services  
Thunder Basin Grazing Association  
T. R. Ranch Limited  
V Bar F Cattle Company  
Wyoming Association of Conservation Districts  
Wyoming Stockgrowers Association  
Wyoming Woolgrowers  
Y Bar U Ranch

### OTHERS

All Wilderness Inventory Respondants  
Casper District Grazing Advisory Board  
Grazing Lessees (BLM) in Johnson, Sheridan, Campbell Counties  
Lessees in Wilderness Study Areas  
Other Interested or Affected Individuals  
American Mining Association  
Archeological Society  
Badley & Rasmussen  
Basin Electric Power Cooperative, Inc.  
Buffalo Chamber of Commerce  
Casper Chamber of Commerce  
Gillette Chamber of Commerce  
Kaycee Lion's Club



## COORDINATION, CONSISTENCY, AND PUBLIC PARTICIPATION

Lonabaugh & Riggs  
Lonabaugh & Vanderhoef  
Sheridan Chamber of Commerce  
Soil Conservation Society of America  
State Historical Society  
University of Wyoming, Library  
Western Network  
Willard Owens Associates, Inc.  
Wyoming Archeological Association  
Wyoming Geological Association  
Wyoming Mining Association  
Wyoming Outfitters Association

Copies of this Document are available for  
Public Inspection at the Following Locations:

Bureau of Land Management  
Office of Public Affairs  
Wyoming State Office  
2515 Warren Avenue (P.O. Box 1828)  
Cheyenne, WY 82001

Bureau of Land Management  
Casper District Office  
951 Rancho Road  
Casper, WY 82601

Bureau of Land Management  
Buffalo Resource Area  
300 Spruce Street (P.O. Box 670)  
Buffalo, WY 82834

Campbell County Library  
412 S. Gillette Ave.  
Gillette, WY 82716

Converse County Library  
300 Walnut  
Douglas, WY 82633

Johnson County Library  
90 N. Main  
Buffalo, WY 82834

Laramie County Library  
2800 Central Avenue  
Cheyenne, WY 82001

Natrona County Library  
307 E. 2nd  
Casper, WY 82601

Sheridan County Library  
320 N. Brooks  
Sheridan, WY 82801



## APPENDIX A

### USE OF MINERAL MATERIALS

#### M3 - Alternative 1

Specific uses of mineral materials would be allowed in the following areas, as indicated.

#### Johnson County

##### 1. Free Use (county-city-state)

T45N, R84W: Sec. 25, S1/2; Sec. 26, SE1/4

T46N, R85W: Sec. 4, E1/2E1/2; Sec. 9, E1/2NE1/4; Sec. 10, SW1/4, SW1/4NW1/4; Sec. 22, W1/2E1/2; Sec. 26, NE1/4; Sec. 27, NE1/4NE1/4

T47N, R85W: Sec. 28, E1/2E1/2; Sec. 33, E1/2E1/2

T43N, R79W: Sec. 4, SE1/4; Sec. 7, W1/2W1/2; Sec. 9, NE1/4

T43N, R80W: Sec. 11, SE1/4; Sec. 12, E1/2

T43N, R81W: Sec. 9, NW1/4, E1/2NE1/4; Sec. 10, S1/2NW1/4; Sec. 11, N1/2SE1/4, NE1/4SW1/4

T43N, R83W: Sec. 34, SW1/4SE1/4

T45N, R82W: Sec. 2, SW1/4, W1/2SE1/4; Sec. 3, S1/2N1/2; Sec. 4, N1/2N1/2, SW1/4NW1/4, SE1/4NE1/4; Sec. 9, S1/2NW1/4, NE1/4NW1/4, NW1/4, S1/2; Sec. 10, S1/2N1/2, N1/2NW1/4

T47N, R82W: Sec. 3, S1/2; Sec. 9, S1/2NW1/4, N1/2SW1/4, E1/2NE1/4; Sec. 10, NW1/4



## APPENDIX A

### Competitive Sales

#### Sand and Gravel

T49N, R80W: Sec. 7, NE1/4NW1/4

T49N, R81W: Sec. 5, W1/2, NE1/4; Sec. 6, E1/2NW1/4, W1/2NE1/4,  
W1/2SE1/4

T50N, R81W: Sec. 32, E1/2SW1/4, SE1/4; Sec. 33, W1/2SW1/4, SW1/4NW1/4

T49N, R82W: Sec. 3, SE1/3, except for SE1/4SE1/4; Sec. 5, W1/2;  
Sec. 6, N1/2NE1/4, SE1/4NE1/4; Sec. 11, NW1/4

### Campbell County

#### Free Use

#### Sand and Gravel

T45N, R73W: Sec. 15, SW1/4, E1/2SW1/4; Sec. 22, N1/2NE1/4

T46N, R71W: Sec. 20

T46N, R72W: Sec. 26, NE1/4NE1/4; Sec. 27, N1/2SE1/4NE1/4

#### Scoria

T45N, R71W: Sec. 31, E1/2; Sec. 32, W1/2W1/2

T45N, R72W: Sec. 14, SW1/4; Sec. 15, SE1/4; Sec. 23, SW1/4; Sec. 26,  
NW1/4



## APPENDIX A

### Competitive Sales

#### Scoria

T44N, R71W: Sec. 6, W1/2

T46N, R72W: Sec. 26, SE1/4NE1/4

T46N, R71W: Sec. 9, SE1/4NW1/4, NE1/4SW1/4, SW1/4NE1/4

NOTE: Federal surface/federal minerals and private surface/federal minerals are described above.







## APPENDIX B

### TIMBER SALES

#### F2 - Alternative 1

The following timber would be offered for sale in the order listed below. (see map 3)

##### Sale #1 Fiscal Year 1983

Sale Name: Mayworth Slope

Location: T45N, R84W: Sec. 6, 7, 26, 27, and 28

Size: 40 acres (4 cutting units)

Volume: 250 MBF (thousand board feet)

Species: Douglas-fir with smaller amounts of limber pine

##### Sale #2 Fiscal Year 1983

Sale Name: Woosley Cabin

Location: T45N, R85W: Secs. 4 and 5

Size: 36 acres

Volume: 488 MBF

Species: Lodgepole pine with smaller amounts of Douglas-fir,  
Englemann spruce, and subalpine fir



## APPENDIX B

### Sale #3 Fiscal Year 1983

Sale Name: Upper North Fork (Middle and South Fork)

Location: T47N, R85W: Secs. 8 and 17

Size: 25 acres

Volume: 249 MBF

Species: Lodgepole pine

### Sale #4 Fiscal Year 1984

Sale Name: Baldwin Creek

Location: T44N, R85 W: Sec. 9

Size: 80 acres

Volume: 500 MBF

Species: Douglas-fir

### Sale #5 Fiscal Year 1985

Sale Name: Poison Creek

Location: T48N, R84W: Secs. 7, 18, and 19

Size: 120 acres

Volume: 500 MBF

Species: Douglas-fir



## APPENDIX B

### Sale #6 Fiscal Year 1986

Sale Name: Horn

Location: T46N, R84W: Secs. 11 and 12

T46N, R85W: Secs: 5, 6, 7, 8, 17, 18, 19, and 20

Size: 250 acres

Volume: 2,000 MBF

Species: Lodgepole Pine

### Sale #7 Fiscal Year 1987

Sale Name: Red Spring Reservoir

Location: T46N, R84W: Secs. 28 and 29

Size: 50 acres

Volume: 200 MBF

Species: Lodgepole Pine and Douglas-fir

### Sale #8 Fiscal Year 1988

Sale Name: Arndt

Location: T45N, R84W: Secs. 7, 18, and 19

Size: 120 acres

Volume: 500 MBF

Species: Douglas-fir



## APPENDIX B

### Sale #9 Fiscal Year 1989

Sale Name: Gardner Mountain

Location: T44N, R83W: Secs. 6, 7, 8, 17, and 18

T44N, R84W: Secs. 1, 11, 12, and 13

Size: 350 acres

Volume: 1,000 MBF

Species: Ponderosa Pine

### Sale #10 Fiscal Year 1990

Sale Name: Lost Creek

Location: T46N, R85W: Secs. 15 and 22

Size: 50 acres

Volume: 250 MBF

Species: Lodgepole Pine and Douglas-fir

### Sale #11 Fiscal Year 1991

Sale Name: Upper North Fork (North Unit)

Location: T47N, R85W: Section 8

Size: 25 acres

Volume: 200 MBF

Species: Lodgepole Pine



## APPENDIX B

Access for forest management purpose will be negotiated across the following private lands:

1. Poison Creek 1984: T48N, R84W Sections 27, 28, 34, and 35  
T48N, R83W Section 31
2. The "Horn" 1985: T48N, R84W Sections 32 and 33  
T48N, R84W Sections 3, 4, 10, 14, 15, 23 and 26  
T46N, R84W Sections 1 and 2  
T46N, R83W Sections 4, 5, 9, 20, 28, 29 and 33
3. Bull Creek 1985: T47N, R84W Sections 13, 14, 24 and 25  
T47N, R83W Sections 17, 19, 20, 29 and 30
4. Red Springs Reservoir T46N, R84W Sections 31, 32 and 33  
Pack Saddle Canyon 1986: T45N, R84W Section 6
5. Arndt 1987: T45N, R84W Sections 17, 18 and 19  
T45N, R85W Section 12
6. Gardner Mountain 1988: T44N, R84W Section 1
7. Lost Creek 1989: T46N, R85W Section 15
8. Lower Beartrap 1990: T45N, R85W Sections 2, 11, 14 and 23  
T44N, R85W Section 2
9. Billy Creek 1991: T48N, R83W Sections 7, 17 and 18
10. Upper North Fork 1992: T47N, R85W Sections 9, 10 and 20  
and Baldmine
11. Dull Knife 1993: T44N, R83W Sections 17, 20, 21, 27 and 28
12. The "Castle" 1994: T45N, R85W Sections 32 and 33
13. Cash Canyon 1995: T45N, R84W Sections 8, 9 and 10
14. Hammond Spring 1996: T46N, R85W Sections 11, 12 and 14







## APPENDIX C

### OFF-ROAD VEHICLE TRAVEL

#### R3 - Alternative 1

The following ORV designations, as described in the ORV plan for Johnson County, would be in effect.

A. Open Areas . . . . . 20,386 acres

(ORVs are not confined to roads)

1. Livestock driveways . . . . . 16, 746
2. Powder River . . . . . 3,640

B. Closed Areas . . . . . 3,650

(ORV use is temporarily or permanently excluded)

1. Middle Fork Canyon . . . . . 3,238  
(Johnson Co.) . . . . . (3,038)
2. Cantonment Reno . . . . . 572
3. Dry Creek Petrified Tree . . . . . 40

Environmental Education Area

C. Limited Areas . . . . . 488,015

(ORV travel is confined to existing roads and trails or to seasons of use).

1. Vehicle travel is permitted only on existing roads  
and vehicle routes, . . . . . 326,187



## APPENDIX C

2. Vehicle travel is permitted only on road and vehicle routes designated by the BLM . . . . .	124,182
a. North Fork of Powder River . . . . .	16,432
b. Gardner Mountain Area . . . . .	28,832
c. Red Wall . . . . .	5,442
d. Middle Fork Management Unit . . . . .	(30,640)
e. Petrified Forest . . . . .	427
f. Fortification Creek Area . . . . .	22,337
g. Powder River Breaks . . . . .	15,372
	4,055
h. Bozeman Trail . . . . .	645
3. Vehicle travel is limited to season-of-use (closed Dec. 1 to April 1) . . . . .	37,646
a. North Fork of Powder River . . . . .	16,432
b. Barnum Mountain . . . . .	2,800
c. Middle Fork Area . . . . .	6,800
d. Fortification Creek . . . . .	11,614
TOTAL PUBLIC LANDS . . . . .	512,051



# APPENDIX D

## FIRE MANAGEMENT

### FM-1 - Alternative 1

#### MIDDLE FORK MANAGEMENT AREA

##### Suppression

1. Whenever a fire is reported in or near the management area, a fixed-wing aircraft will be dispatched to verify the exact location and to assess its potential spread and behavior and land ownership. Personnel in the aircraft will also determine the presence or absence of firefighting forces and the need for additional personnel or equipment.
2. Initial attack will be made by ground pumpers, hand crews, and helicopters if available. Vehicles will be driven on existing roads and trails as much as possible; cross-country travel is permitted but it is limited to areas where such travel can be done without causing erosion or damage to vegetation. Hand crews will use conventional handtools and chainsaws for fireline construction. Pumpers and portable pumps may be used to support handline construction through hose lays where possible.
3. Helicopters and retardant aircraft may be used in initial attack and as reinforcement as deemed necessary by the fire boss.

Helispot construction will not be permitted because adequate landing areas exist throughout the area. Exceptions may be made in order to prevent loss of life or evacuate injured persons. Retardants may not be applied directly to streams. All aerial retardants used in the area will have fugitive (disappearing) market dyes added to the mixture to reduce the visual impact.

4. Heavy equipment (cats/tractors) will not be used to construct firelines in the unit, except to prevent loss of human life.
5. Fires that escape initial attack or containment during the first burning period will be reinforced with additional hand crews, pumpers and aircraft (helicopter and/or retardant tankers). Whenever a fire burns uncontrolled into the second burning period, a qualified (red-carded) fire boss (Class III, II, or I, as appropriate) will be assigned to take over the fire.
6. All fire camps and heliports will be located in areas where the resulting impacts are minimal and are capable of being easily rehabilitated. Fire camps and heliports shall have vehicle access to them.

##### Rehabilitation

1. All firelines constructed on slopes of 25% or more will be rehabilitated to prevent erosion. Rehabilitation measures may include water-barring, backfilling, seeding, and planting as necessary (see SAW3 and 6).
2. Other measures, such as seeding and planting of the entire burned area, may be employed if called for in the rehabilitation plan. Rest and deferment of the burned area from domestic livestock grazing may be required to aid in the burned area's recovery. A minimum of two growing seasons' deferment is required for all areas which have been seeded and/or planted. Only native species may be used for seeding or planting measures.



## APPENDIX D

### WILDERNESS STUDY AREAS

#### Suppression

1. No heavy equipment will be used in WSAs except to protect human life or high value property.
2. All fire camps and heliports will be located outside the WSAs.

3. Procedures discussed for the Middle Fork Unit will apply with the exception of 1 and 2 above.

#### Rehabilitation

Procedures for rehabilitation identified for the Middle Fork Unit will apply in WSAs.



# APPENDIX E

## WILDERNESS DESIGNATION

A Wilderness Study Area (WSA) designated as "Wilderness" by Congress would be managed according to the Bureau's Wilderness Management Policy, published in September, 1981. A copy of the full policy is available from any BLM office. The following is a brief summary of the management policy.

### General Policy

1. BLM wilderness areas would be managed so as to preserve their wilderness character in a manner that would leave them unimpaired for future generations.
2. Some uses of wilderness, such as mining, grazing, and motorized travel, do not conform to the philosophy of wilderness but are specifically permitted by the Wilderness Act of 1964. These nonconforming but accepted uses would be managed in a manner that would prevent unnecessary and undue degradation of the area's wilderness character.

### Specific Policy Guidance

#### Preservation of Wilderness Character

BLM would foster a natural distribution of native flora and fauna. Fire, insects, and diseases would be allowed to play a natural role in the ecosystem except where those activities endanger human life, property, or high value resources on adjacent nonwilderness lands.

#### Visitor Use

If visitor use threatens to impair the area's wilderness character, action would be taken to prevent impairment through direct or indirect methods. There are instances where visitor use would be curtailed or eliminated to protect the wilderness resource. Manage-

ment would favor those types of visitor uses that depend on a wilderness setting.

### Non-Conforming Uses

**Valid Existing Rights.** Private rights existing before the date an area was designated as wilderness would be recognized.

**Aircraft and Motorboats.** Use of aircraft and motorboats may be permitted to continue where such uses were established before designation.

**Mining Law Administration.** Holders of unpatented mining claims validly established before wilderness designation would be given the rights established by the U.S. mining laws. Holders of unpatented mining claims validly established after wilderness designation would be given similar rights subject to provisions of the Wilderness Act. All claimants must comply with reasonable conditions for protection of the wilderness resource.

Timber on mining claims may be cut only for the actual development of the claim. All timber harvest would minimize adverse effects to the wilderness resource.

A bond may be required to ensure that all reasonable measures have been taken to reclaim disturbed lands as soon as possible after operations cease.

**Withdrawal.** Subject to valid existing rights effective January 1, 1984, the minerals in a designated wilderness are withdrawn from all forms of appropriation under the mining and mineral leasing laws. All mineral activities would be guided by the Interim Management Policy (BLM 1980) until a wilderness determination was made.



## APPENDIX E

**Access to Non-Federal Land.** Owners of non-federal land completely surrounded by wilderness shall be given adequate access to their land. If that access would be detrimental to wilderness values, BLM would attempt to acquire the inholding by purchase or exchange before granting access.

**Existing Structures.** Existing structures would be removed unless they 1) have historic significance, or 2) as necessary for management of resources within the wilderness area.

**Buffer Zones.** No buffer zones would be created around wilderness areas to protect them from the influence of activities on adjacent lands.

**Grazing.** Grazing of livestock would be permitted to continue when established before wilderness designation if it is in compliance with the wilderness management policy.

**Forestry.** No commercial cutting of trees would be permitted. If campsite or cooking fires are permitted, fuelwood cutting would be limited to dead and down material.

### Guidelines for Specific Activities

#### Visitor Facilities

Facilities such as trails, bridges, signs, and campsites would be provided only when necessary for the protection of the wilderness resource. No improvements would be provided for the comfort and/or convenience of the visitor.

#### Fish and Wildlife

Natural processes would be allowed to occur in wilderness ecosystems, including fish and wildlife populations, as much as possible without human influences. The preservation of sensitive, rare, threatened and endangered species would be favored.

Hunting and fishing would be permitted subject to applicable state and federal laws and

regulations. Commercial trapping would not be permitted.

#### Water Resource Management

Watershed restoration and water-yield improvements are not generally in keeping with the wilderness objectives. Monitoring devices would be permitted if necessary for resource protection.

#### Air Quality

BLM would manage designated wilderness areas under Class II air quality standards. This allows moderate deterioration associated with well controlled industrial and population growth.

#### Grazing

The Wilderness Act provides for the continuation of livestock grazing where established prior to wilderness designation. This includes the activities and the facilities necessary to support a livestock grazing program. Major provisions of this policy are:

1. There would be no curtailment of grazing simply because an area has been designated wilderness. Any adjustments would be made as the result of normal grazing management plans.
2. The maintenance of support facilities is permissible in wilderness. Maintenance of facilities can be accomplished through the occasional use of motorized equipment where practical alternatives do not exist.
3. New improvements or facilities would be permissible if their primary purpose is protection rather than the accommodation of more livestock.
4. Facility replacement would not require the use of "natural materials" unless the use of such materials would not impose unreasonable additional costs.



## APPENDIX E

### Minerals Management

A plan of operations must be submitted for all mining operations in wilderness areas. The provisions approved in the operating plan would protect the rights of the operator while minimizing the impacts on the wilderness resource. No unnecessary or undue degradation of the wilderness resource would be allowed.

Lands within wilderness areas would be open to appropriation under the mining laws until December 31, 1983, to the same extent as prior to wilderness designation. Development would be allowed to continue after December 31, 1983, only on valid claims located before that date.

Before approving a plan of operation for actions after December 31, 1983, the following criteria must be satisfied:

1. No unnecessary or undue degradation to public land resources would occur.
2. If motorized equipment would be proposed for use, there should be no other reasonable alternative.
3. The reclamation measures proposed must be adequate to provide for restoration of disturbed lands to an essentially natural state.

### Use of Motorized Equipment

Travel within wilderness areas is normally by nonmotorized, non-mechanical means. However, motorized equipment may be authorized in the following situations (all uses are conditional):

1. Public use of aircraft or powerboats where previously established.
2. Mining and prospecting.
3. Livestock grazing operations.
4. Emergency conditions involving visitor health and safety.
5. Fire suppression emergency.
6. Official administration of the area.
7. Research and inventory.
8. Insect and disease control.
9. Pursuit of fugitives.

### Research

Research is an important use of the wilderness resource. Research would be permitted as long as it is conducted in a manner that would preserve the wilderness character of the area. Research that evaluates the effectiveness of attaining wilderness management objectives would be supported.





# APPENDIX F

## RANGE ALLOTMENT

### CATEGORIZATION CRITERIA

#### Category M - Maintain Existing Resource Conditions

##### Factors

- A. Range Condition is Satisfactory:
  - 1. The range condition has been rated good or excellent.
  - 2. Trend is static or improving.
- B. Present management is adequate to maintain the allotment in a satisfactory condition.
  - 1. No significant distribution problems exist.
    - a. Grazing use is evenly distributed on the allotment.
    - b. Less than 20% of the allotment is classified as potentially suitable for livestock grazing.
  - 2. Period-of-use, kind, and numbers of livestock are in conformance with the multiple-use objectives for the allotment.
  - 3. The range condition will improve, or the range management objective rating can be maintained under current management practices.
- C. Allotment has a moderate or high resource production potential, and is producing at or near its potential.

Less than 30% of the allotment is rated as unsuitable for livestock grazing due to slope, topography, or low forage production.
- D. No significant grazing-related resource conflicts have been identified.
  - 1. Forage production is adequate to meet the needs of all grazing animals on the allotment (i.e. the present levels of livestock (actual use) and management objective levels of other grazing animals can be accommodated).
  - 2. Livestock grazing does not conflict with other consumptive and nonconsumptive resource values on the allotment.
- E. Opportunities may exist for positive return from public investments.

The public lands are blocked or intermingled with other lands and provide an opportunity for multiple-use management.

#### Management Actions

BLM's management objective will be to take or authorize actions that will maintain current balanced use and satisfactory resource condition and productivity.

Livestock use (numbers, class, season-of-use) will be permitted as authorized under a 10-year lease. **Increases in use may be allowed** when consistent with multiple-use objectives.

Prescribed flexibility in livestock operations through consultation will be encouraged.

Range improvements will be authorized to meet management objectives.

BLM will conduct low-to-high intensity monitoring depending on the value of all resources in the allotment.

Allotments will automatically be considered for a change in category when the grazing privileges are transferred or with significant changes in actual use or management.

#### Principle Sources of Funding

Private investment in range improvements

Range betterment funds

#### Category I - Improve Existing Resource Conditions

Allotment classified as an intensive management area in the MFP and the allotment analysis identified a need for improving the existing resource conditions.



## APPENDIX F

### Factors

#### A. Range condition is not satisfactory

1. Range condition has been rated poor-to-fair.
2. Trend is apparently static or downward.

#### B. Present levels of management are not adequate to meet the long-term resource objectives.

1. Livestock distribution problems have been identified.
  - a. Distribution of livestock use is not uniform. Portions of the allotment are overused while other areas receive very limited use.
  - b. More than 20% of the allotment may be classified as potentially suitable for livestock grazing.
2. Period-of-use, forage utilization, and numbers of livestock are not in conformance with the multiple-use objectives set for the allotment.
3. Present management practices do not provide for improving range condition.

#### C. The allotment has a moderate-to-high resource production potential and is producing at low-to-moderate levels.

Less than 30% of the allotment is classified as unsuitable for livestock grazing due to slope, topography, or low forage production.

#### D. Allotment analysis identified serious grazing-related resource conflicts on the allotment.

1. Forage production is not adequate to meet the needs of all grazing animals on the allotment. The present levels of livestock use and the management objective levels of other grazing animals cannot be accommodated.
2. Livestock grazing conflicts with other consumptive and nonconsumptive resource values on the allotment.

#### E. Opportunities exist for positive economic return on public investments.

The public lands are blocked or intermingled with other lands and provide an opportunity for multiple-use management.

### Management Actions

BLM's immediate management objective will be to implement actions that will improve current range condition and productivity and enhance multiple use.

Livestock use may be increased or decreased as needed to meet management objectives.

Range improvements will be authorized and installed as needed to meet management objectives.

BLM will conduct variable (up to high) intensity use supervision and monitoring. Monitoring will evaluate the effectiveness of actions taken toward achieving management objectives.

### Principle Sources of Funding

Private investment in range improvements

Range betterment funds

Funding appropriated under FLPMA and PRIA

### Category C - Custodial Management

Allotments outside the intensive management areas where the allotment analysis revealed that federal multiple-use management opportunities are limited.

### Factors

#### A. Range condition

Present range condition is not an allotment analysis factor.

#### B. Present management is satisfactory, or is the only logical practice under existing resource and land ownership conditions.

#### C. Resource production on the allotment is variable.

More than 30 percent of the allotment may be classified as unsuitable due to low forage production potential.

#### D. Serious resource conflicts are limited.

1. Livestock grazing does not have significant adverse impacts on legislatively protected or mandated resources such as endangered species or critical wetland riparian on the allotment.
2. The allotment is not critical to any renewable resource program.



## APPENDIX F

- E. Opportunities for positive economic return on public investment do not exist or are constrained by technological or economic factors.

The land ownership pattern is such that there is no opportunity for intensive management due to:

1. Land ownership pattern consisting of isolated noncontiguous tracts of federal land.
2. The Federal lands contribute only a small percentage of the total livestock forage used on the ranch unit.
3. Existing or imminent noncompatible land use.

### Management Actions

BLM's short-term management objective would be to manage the land in a custodial manner by authorizing grazing use at the level needed to prevent deterioration of present resource conditions or development of multiple-use conflicts.

BLM will conduct low-intensity use supervision and monitoring. Monitoring will focus on changes in ownership or livestock operations.

Flexibility of turnout and removal dates and numbers of livestock will be prescribed through consultation.

Range improvements would be authorized to meet management objectives.

BLM would cooperate with SCS or other resource agencies to develop ranch plans on an allotment-by-allotment basis.

### Principal Source of Funding

Private investment in range improvements

Range betterment funds

## APPENDIX F

### SOUTH BIG HORN AREA

#### "I" ALLOTMENTS

Allotment Number	Acres BLM	Acres Private	Acres State	BLM Only Authorized Use
7119	2,171	5,600	1,520	249
*7662	9,000	5,400	1,760	738
7196	8,983	10,664	1,640	1,068
*7058	9,236	6,427	1,650	917
*7203	9,173	5,045	0	553
7236	6,573	9,360	---	493
*7562	2,118	1,280	---	285
*7628	4,419	3,100	1,600	1,003
*7630	8,390	2,920	1,546	778
7600	11,541	17,500	5,000	1,844
7248	8,093	7,400	800	546

### POWDER RIVER BREAKS AREA

#### "I" ALLOTMENTS

Allotment Number	Acres BLM	Acres Private	Acres State	BLM Only Authorized Use
*7086	5,239	20,320	640	460
7102	11,300	11,260	1,920	1,701
*7103	7,142	8,280	1,280	699
*7130	3,240	515	0	470
7137	16,603	8,800	0	1,672
*7226	38,792	32,840	4,240	4,582
*7227	14,759	23,160	3,840	1,082
7235	9,346	22,034	2,560	977
*7271	15,279	15,620	1,920	1,676
*7285	8,992	8,039	1,280	981
7348	19,186	29,949	---	1,809
*7529	6,080	16,420	1,280	823
7581	3,157	13,680	640	272
*7645	7,845	9,860	3,200	658
*7646	7,537	18,910	1,920	914
7435	17,072	14,271	640	1,779
7007	2,720	2,811	0	274
7259	3,178	1,643	720	457
7268	1,478	600	0	129
7241	1,776	2,440	640	206

1/ No state acreage figure available

Acreage figures on this list cannot be added to produce acreage figures used in various chapters in this document.

\* First group of 16 "I" allotments - see table 2 for a proposed listing of range improvements on these allotments (10 yr. period).

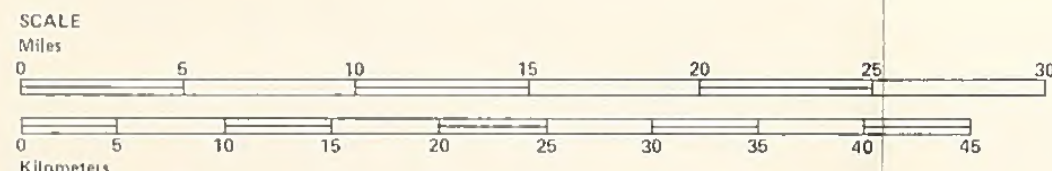






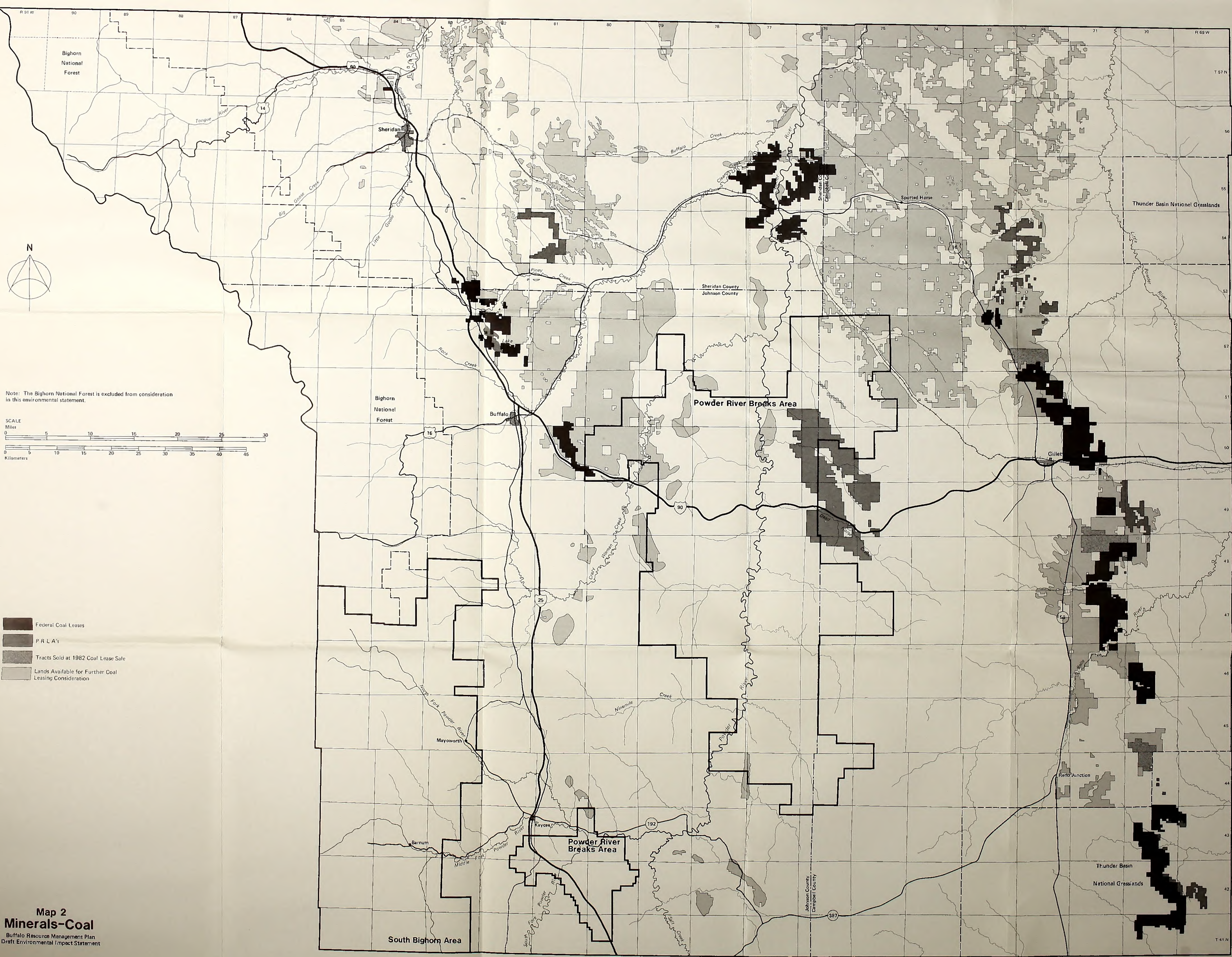


Note: The Bighorn National Forest is excluded from consideration in this environmental statement.



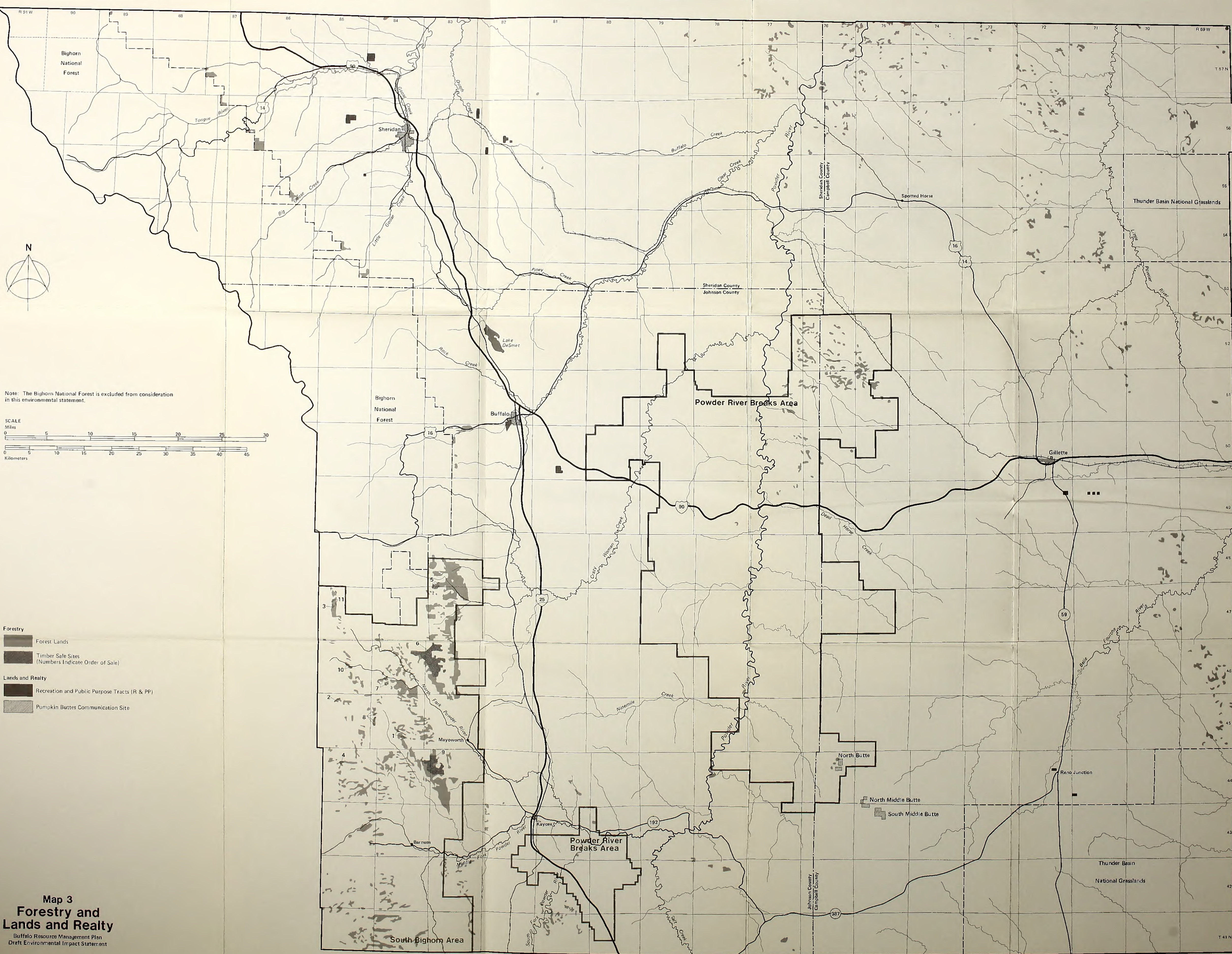
- Existing Oil and Gas Fields (Known Geologic Structure)
- Mineral Material Sites
- No Surface Occupancy
- Closures (No Lease; Oil and Gas)
- Closed to Mineral Entry ( 1872 Mining Law)



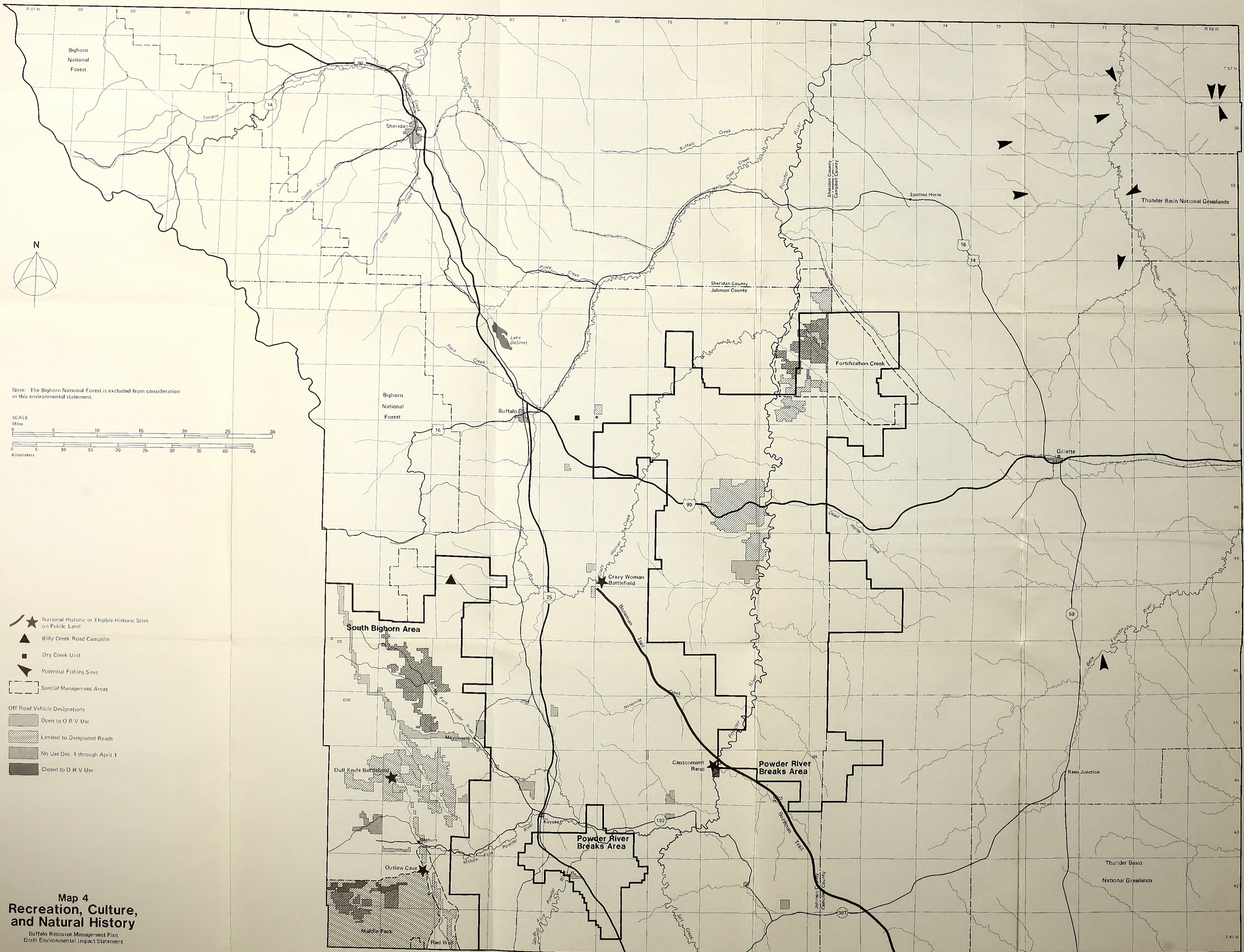


**Map 2**  
**Minerals-Coal**  
Buffalo Resource Management Plan  
Draft Environmental Impact Statement

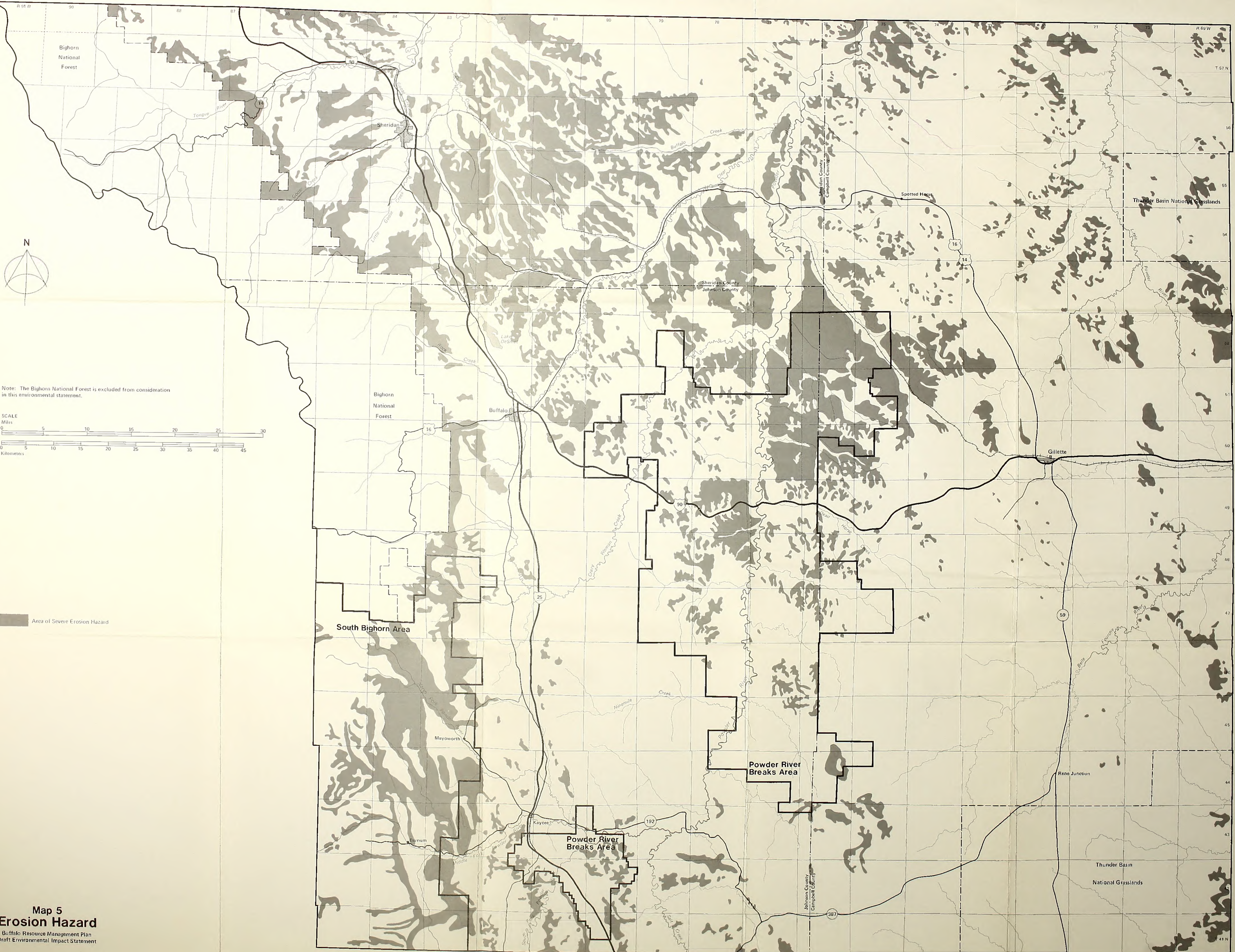






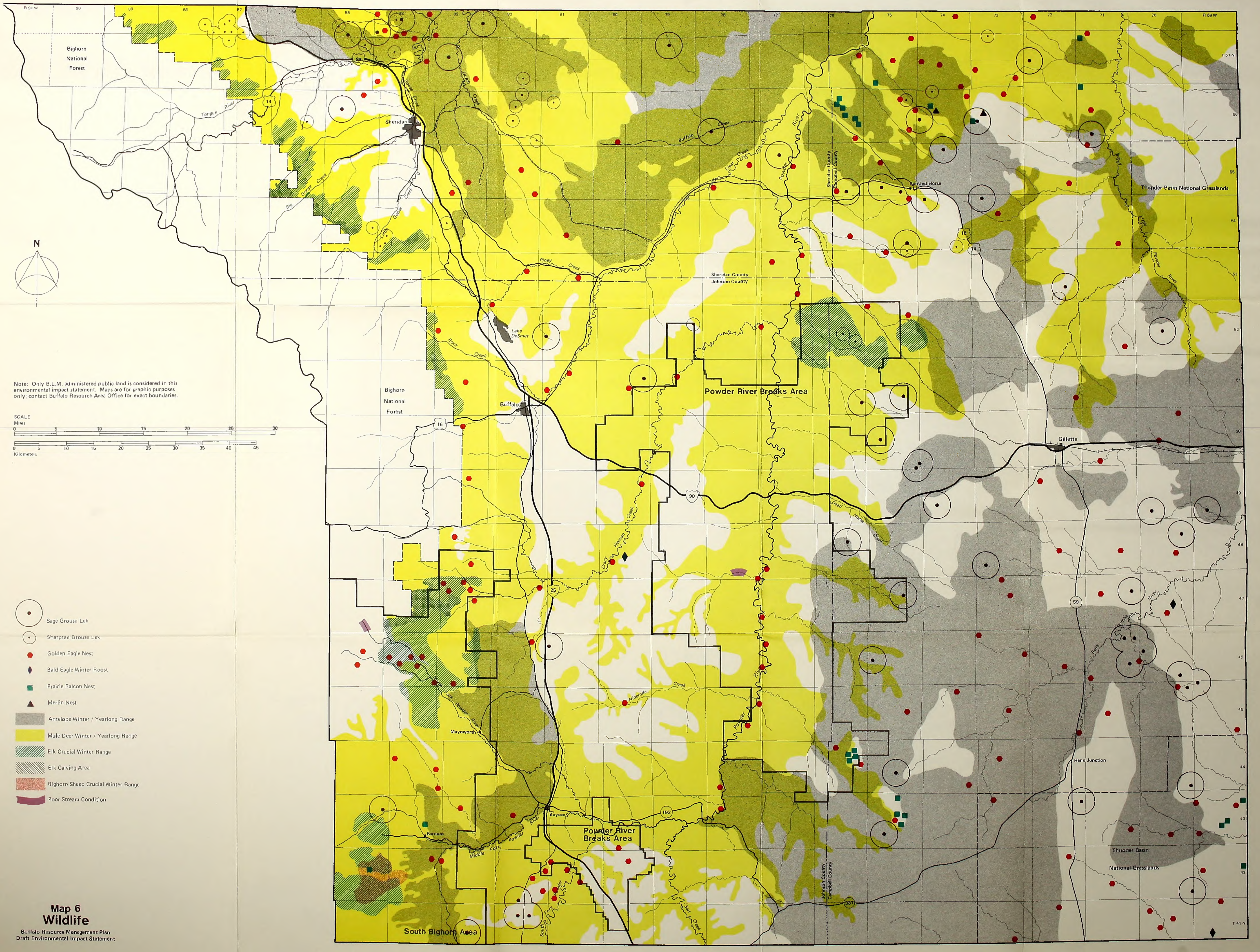






Map 5  
Erosion Hazard  
Buffalo Resource Management Plan  
Draft Environmental Impact Statement



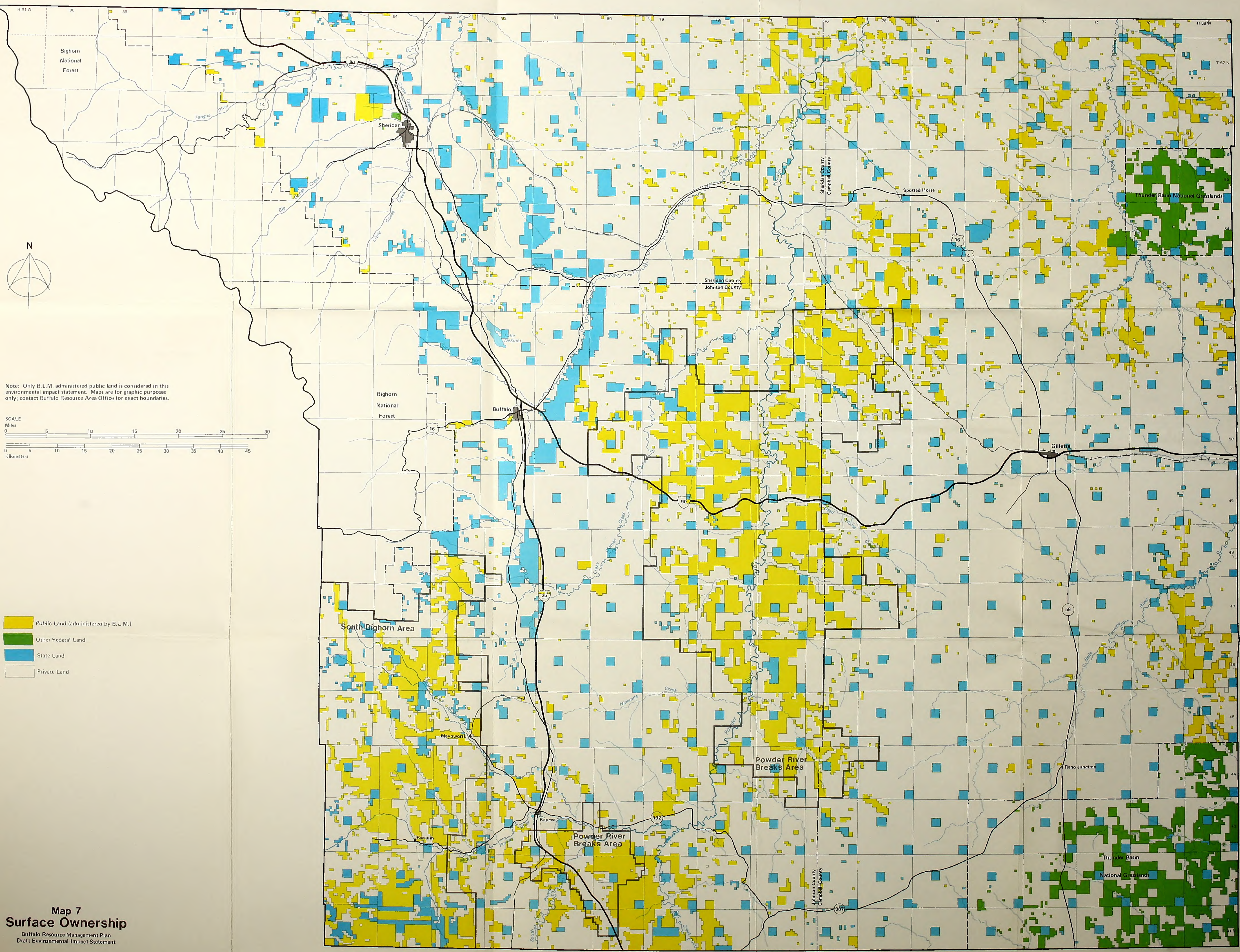


Note: Only B.L.M. administered public land is considered in this environmental impact statement. Maps are for graphic purposes only, contact Buffalo Resource Area Office for exact boundaries.

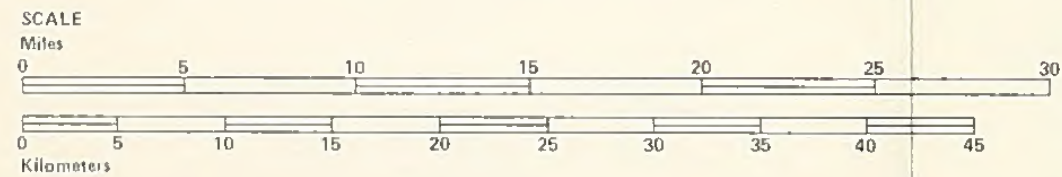
SCALE  
Miles  
0 5 10 15 20 25 30  
Kilometers  
0 5 10 15 20 25 30 35 40 45

- Sage Grouse Lek
- Sharp-tail Grouse Lek
- Golden Eagle Nest
- ◆ Bald Eagle Winter Roost
- Prairie Falcon Nest
- ▲ Merlin Nest
- Antelope Winter / Yearlong Range
- Mule Deer Winter / Yearlong Range
- Elk Crucial Winter Range
- Elk Calving Area
- Bighorn Sheep Crucial Winter Range
- Poor Stream Condition





Note: Only B.L.M. administered public land is considered in this environmental impact statement. Maps are for graphic purposes only, contact Buffalo Resource Area Office for exact boundaries.



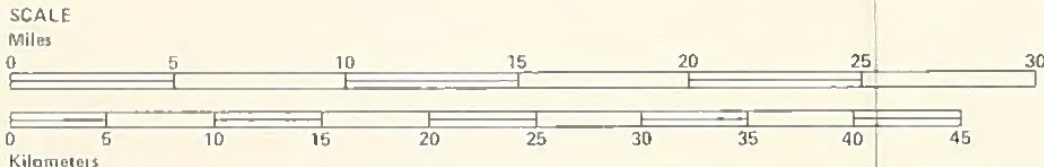
- Public Land (administered by B.L.M.)
- Other Federal Land
- State Land
- Private Land

**Map 7**  
**Surface Ownership**  
Buffalo Resource Management Plan  
Draft Environmental Impact Statement



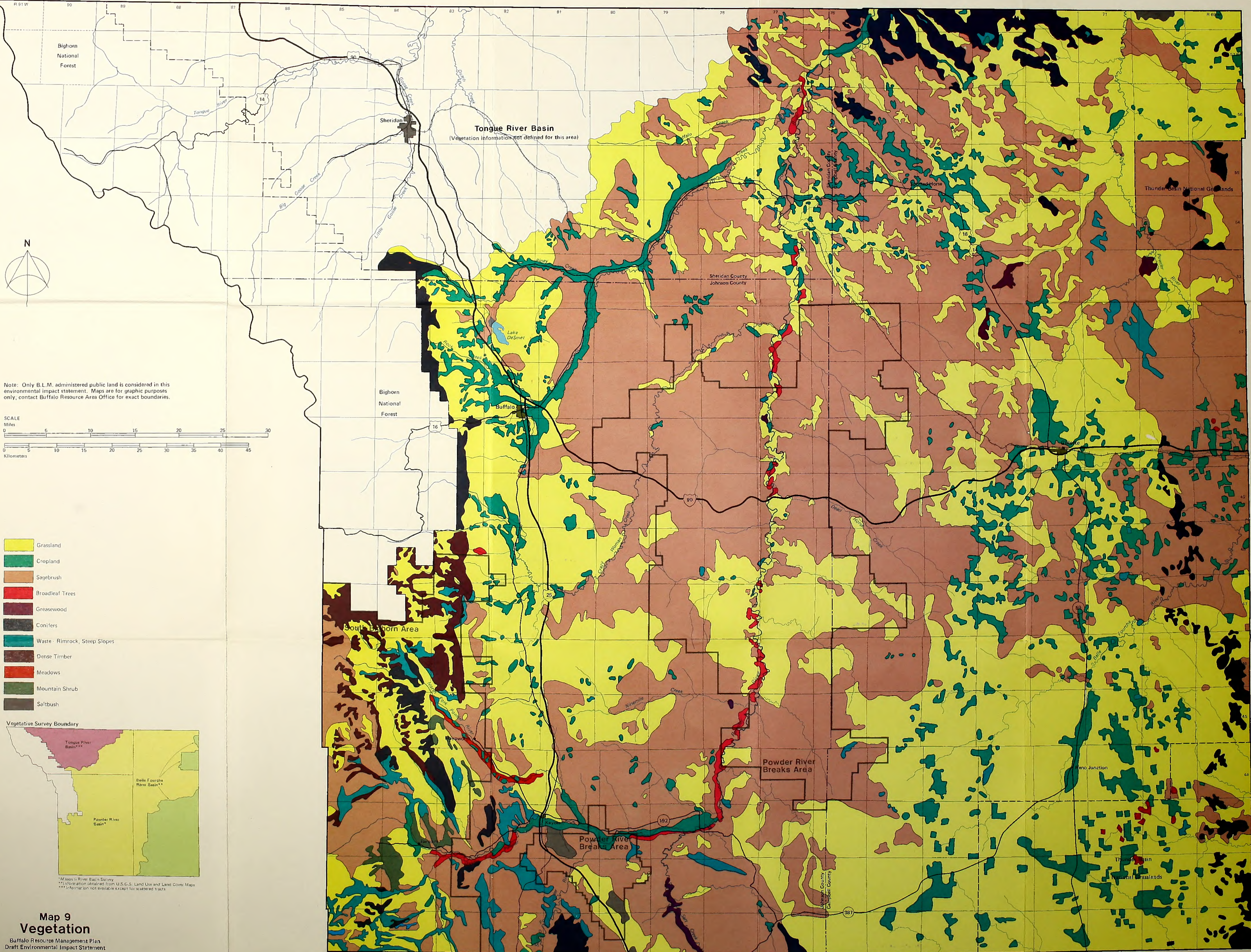


Note: The Bighorn National Forest is excluded from consideration in this environmental statement.

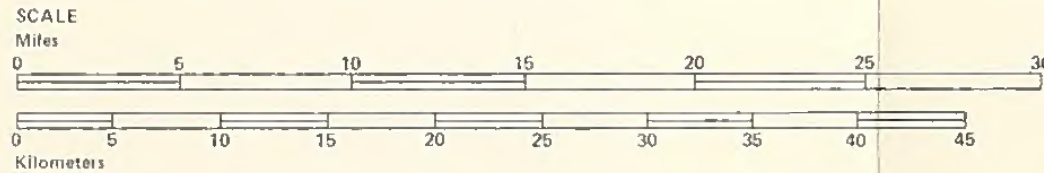


- Soils on Alluvial Fans
  - A-1 Cushman-Stoneham-Fort Collins
  - A-2 Ascalon-Fort Collins Shingle
- Soils on Foothills
  - F-1 Wolf-Ascalon-Cragola
  - F-2 Raynestoid-Tropical Aridic Argiboralls
  - F-3 Aridic-Argicstolls-Cragola
- Soils on Mountains
  - M-1 Hazeton-Burgess-Mathers
  - M-2 Starman-Woolsey-Decross
  - M-3 Sunup-Passcreek-Rock Outcrop
  - M-4 Woolsey-Burgess-Decross
- Soils on Terraces
  - T-1 Big Horn-Wolf Variant-Ulm
- Soils on Uplands
  - U-1 Wynano-Terry-Cushman
  - U-2 Shingle-Rock Outcrop
  - U-3 Renohill-Shingle-Stoneham
  - U-4 Wibaux-Kirtley Variant-Rock Outcrop
  - U-5 Shingle-Wibaux-Rock Outcrop
  - U-6 Briggsdale-Renohill-Pugsley
  - U-7 Olney-Maysdorf-Ulm
  - U-8 Shingle-Briggsdale-Cushman
  - U-9 Shingle-Cushman-Bidman
  - U-10 Shingle-Thedaland-Kim
  - U-11 Shingle-Fort Collins-Cushman
  - U-12 Maysdorf-Bidman-Fort Collins
  - U-13 Cushman-Bowbac-Fort Collins
  - U-14 Wibaux-Sear-Briggsdale
  - U-15 Wolf Variant-Shingle-Emigrant
  - U-16 Samst-Shingle-Rock Outcrop
  - U-17 Briggsdale-Renohill-Fort Collins
  - U-18 Terry-Tassel-Fort Collins
  - U-19 Terry-Tassel-Shingle
  - U-20 Moret-Kirtley-Rock Outcrop
  - U-21 Samst-Gaynor-Rock Outcrop
  - U-22 Rock Outcrop-Spearfish
  - U-23 Schooner-Gateson-Rock Outcrop
- Soils on Floodplains and Alluvial Fans
  - V-1 Haverson-Glenberg-Bankard
  - V-2 Haverson-Bidman-Glenberg
  - V-3 Haverson-Lohmiller-Glenberg
  - V-4 Barnum-Redbanks

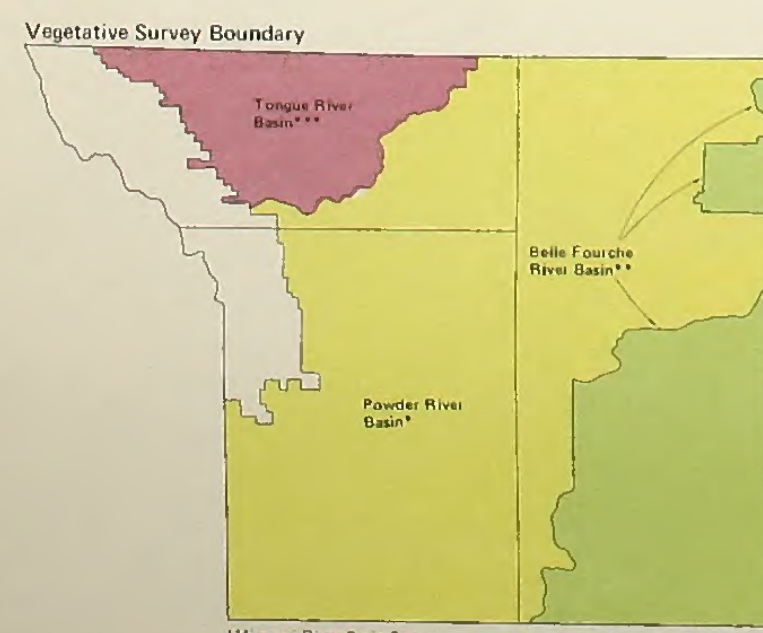




Note: Only B.L.M. administered public land is considered in this environmental impact statement. Maps are for graphic purposes only, contact Buffalo Resource Area Office for exact boundaries.



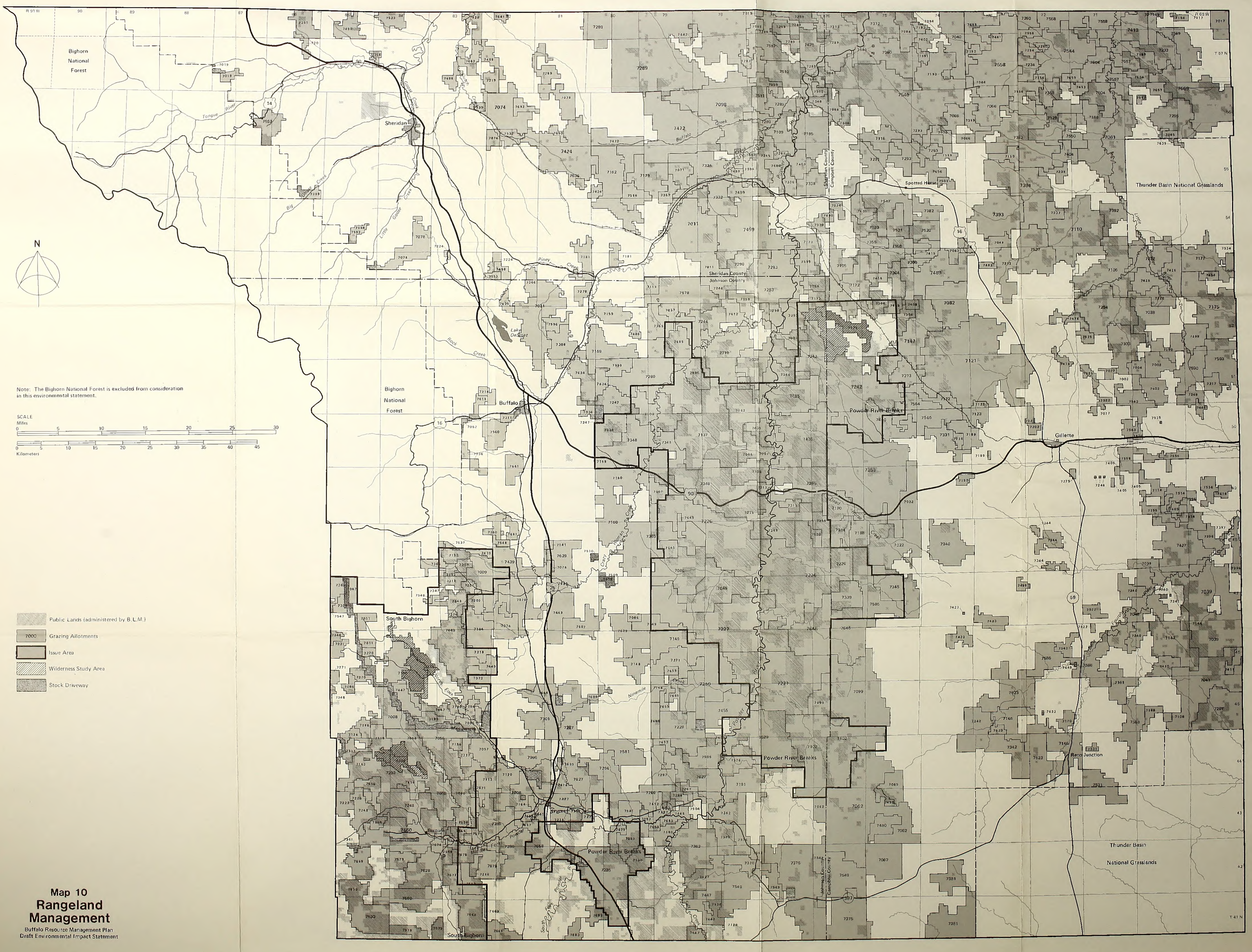
- Grassland
- Cropland
- Sagebrush
- Broadleaf Trees
- Greasewood
- Conifers
- Waste - Rimrock, Steep Slopes
- Dense Timber
- Meadows
- Mountain Shrub
- Saltbush



\*\*\*Missouri River Basin Survey  
\*\*Information obtained from U.S.G.S. Land Use and Land Cover Maps  
\*\*\*Information not available except for scattered tracts

**Map 9  
Vegetation**  
Buffalo Resource Management Plan  
Draft Environmental Impact Statement







BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225



L-1792  
Bci

wer's Card  
884 1983

rc management  
onmental impact

rower	Office Code	Date Ret'd

DSC 1279-3c (May 1981)

HD 243 .W8 B84 1983

Draft resource management  
plan environmental impact

BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225





U.S. Department of the Interior  
Bureau of Land Management  
Buffalo Resource Area, Wyoming

March 1983